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Contractors and Engineers

magazine of modern construction

MARCH 1959

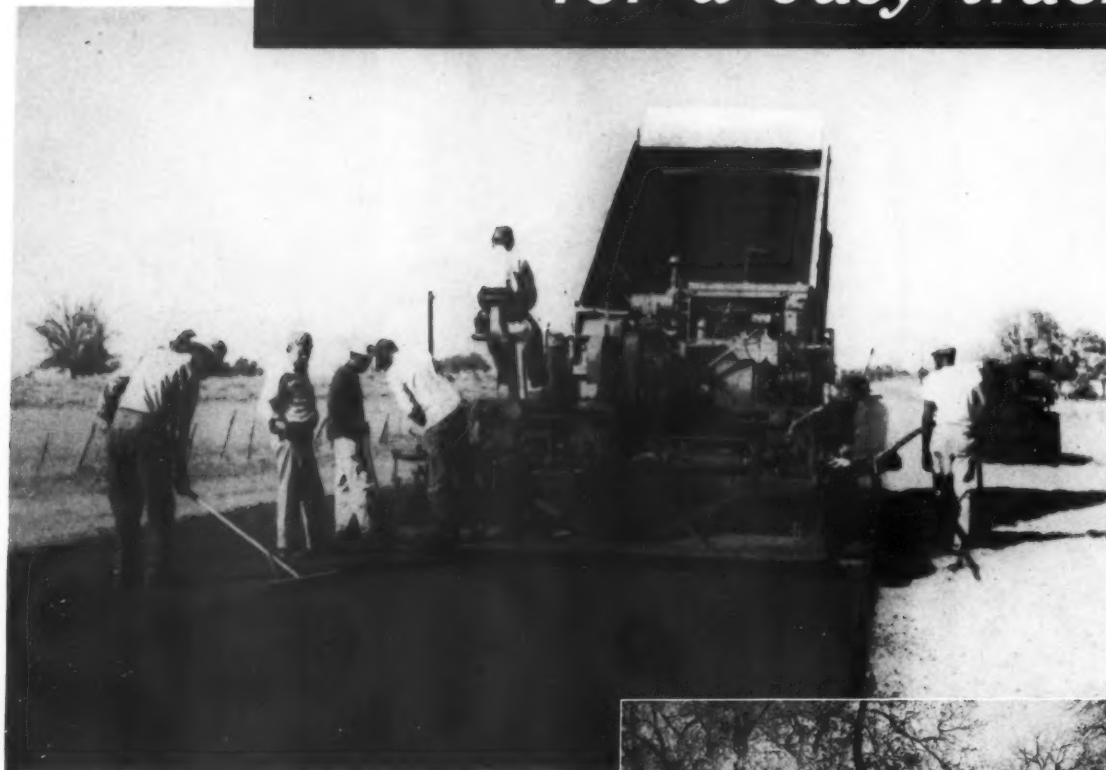
A Bittenheim Publication

Pile driving for bridge
Page 82



Asphalt overlay

for a busy truck route



US Route 75 in Texas received hot-mix Texaco Asphaltic Concrete overlay, constructed by the Gulf Bitulithic Company.

Another section of US 75, which was given a Texaco Asphaltic Concrete overlay by the Public Construction Company.

US 75 is one of the principal trucking routes of Texas. It connects the State's two largest cities, Houston and Dallas.

Last year, two Texas contractors teamed up to construct an overlay of heavy-duty hot-mix Texaco Asphaltic Concrete pavement by a "pave and skip" method on a 30-mile section of this important route. Portions of the existing pavement in satisfactory condition were not overlaid.

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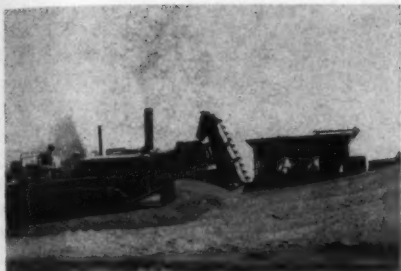
TEXACO ASPHALT

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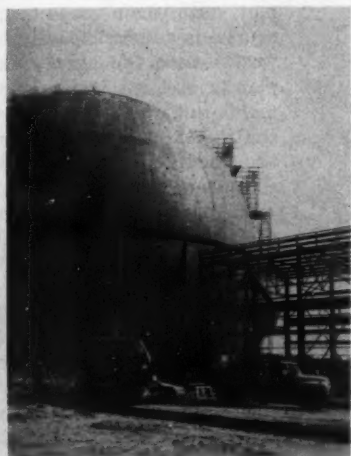
MARCH 1959

Contractors and Engineers

magazine of modern construction



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loading operation on roadway job. Page 156

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Specifications under scrutiny



This is the busy paper-work time of the year for contractors when bids are being submitted as a prelude to the coming construction season. Despite some improvements in certain areas, many specifications are still the same old traps that ensnare contractors in a net of confusing double talk. That rusty and trusty old shibboleth, "at the direction of the engineer," can still be found buried in the small type of many standard specifications. We call this phrase "trusty," since it can usually be relied on to save the specification writer embarrassment should he fail to indicate clearly and specifically what is meant by all the contract requirements.

A classic example of this is the concrete project where the engineer directed the contractor to include in the mix a necessary admixture that the specifications failed to mention. The cost of this one item was somewhere around \$100,000!

Writing spex is no easy task. The sheer bulk of them on a project of any size is imposing. But as contractors become more specialized in one field of endeavor, more and more subcon-

tractors are needed to do the work. This is especially noted on a building job where the general contractor may be nothing more than a broker, subletting every portion of the project to specialty contractors and doing nothing himself. Consequently, to insure adequate inspection and satisfactory work, the owner has to lay down all-embracing specifications.

Government jobs attract more bidders than does work for private owners who can limit, "by invitation," the number of contractors who may submit bids. Thus on public works, with more bidders involved, specifications tend to become more complicated in order to protect the agency dealing with an untried and perhaps inexperienced contractor.

Another well known specification qualifier is the weasel-word "or equal" clause. This is used when the owner—public or private—wants a specific product but cannot say so, since by so doing one manufacturer would get preference over another. This can react to the disadvantage of the owner and may favor the contractor, thus creating a situation opposite to that

intended. On a lump-sum bid, for instance, a contractor could contend that an alternate and cheaper product is the equal of the product the owner had in mind. The owner may find it difficult to prove otherwise.

Owners would thus be better off if they would, or could, mention by trade name the products they wish to have built into their project. If such a course is impossible—say on public works—then the agency could state plainly and specifically the requirements to be met. It is then up to the contractor or supplier to prove that the product he offers meets these specifications.

Much disagreement over specifications might be avoided by the owner or agency holding pre-bidding conferences with contractors. At such meetings, the contractor, with his superintendents and estimators, could examine the plans and specifications and take issue with points not clear to them. Such procedures would take time, of course, but these conferences might prevent trouble later on and could conceivably result in a more favorable price to the owner.

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A Vulcan No. 1 hammer is swung into position by a Lima crane for driving an H-pile for a bridge pier in Massachusetts. A Jager compressor powers the hammer.

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MART

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CONTRACTORS AND ENGINEERS

Huge hydroelectric system is being built on Formosa

A multipurpose hydroelectric and water-supply system, which will reclaim 135,000 acres of land and supply 120,000 kw of electric power, is under construction at Taipei, Taiwan (Formosa). The project includes construction of over 100 miles of canal, main and lateral, as well as a water-treatment plant with an eventual capacity of 36,000 tons per day.

Preliminary work has already been started on the Shihmen Dam, the focal point of the project. The dam, which will be one of the highest in the Far East, will be 1,500 feet long and 508 feet high. At the dam site, two cofferdams and an 820-foot-long 30-foot-diameter tunnel will divert the Takekan Creek. When completed, the dam will back up the creek, forming a reservoir with a usable capacity of 304,000 acre-feet. By controlling the level of the Tamsui River to eliminate the flood danger, the dam will open valuable land to industry and agriculture.

Design, construction

Shihmen Development Commission, Shihmen, Taiwan, is carrying out the design and construction of the dam. Tippetts-Abbett-McCarthy-Stratton of New York City and Taiwan is the engineering firm responsible for the design and supervision of construction. This firm has already completed the basic design in New York City and is supervising the detailed design in Taiwan. Morrison-Knudsen Co., Inc., also of New York City, is the advisory constructor.

The entire project is planned for completion in 1962 at an over-all cost of \$40 million, of which the United States will lend the government of Nationalist China \$21,500,000. The loan will be repaid over a 35-year period at 3½ per cent interest.

Bulk of the equipment for construction of the dam, powerhouse, and irrigation canals will come from the United States, although Free China will produce all the necessary cement.

THE END

Henry Harnischfeger elected PCSA president

The new president of the Power Crane and Shovel Association is Henry Harnischfeger, who is also president of Harnischfeger Corp. Election of the 1959 officers was held at the recent annual meeting.

The association has also elected Wilbur L. Schield, president of Schield Bantam Co., as its vice president. Herbert S. Blake, Jr., president of Organization Service Corp., has been elected secretary of PCSA.

MARCH, 1959

An 820-foot-long diversion tunnel is carved out of rock at the dam site of a multipurpose hydroelectric and water-supply system on Formosa. The project, when completed in 1962, will reclaim 135,000 acres of land and supply 120,000 kw of power.



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TRUCK TIRES by

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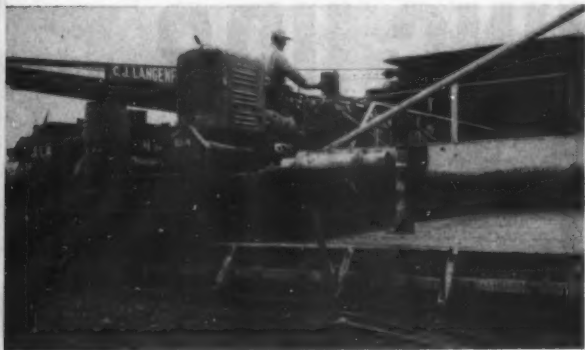
Contractor uses four pavers to

Complete new runway

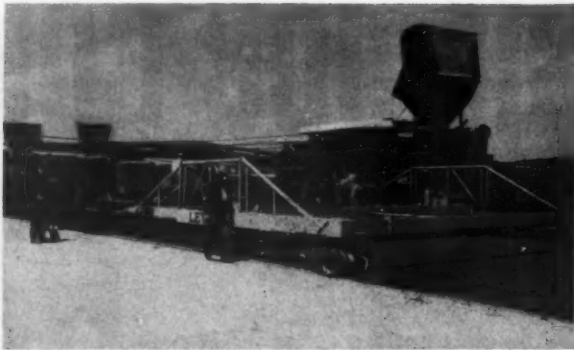
by ANTHONY N. MAVROUDIS
field editor



Leading the fast-moving paving train on the Olmsted Air Force Base job in Middletown, Pa., are two Rex pavers and a Blaw-Knox auger-type spreader. Just behind are two additional Rex pavers that place concrete to complete the full depth of the slab.



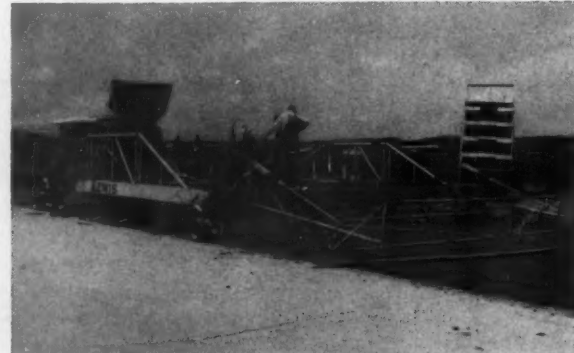
Less than half the thickness of the slab is left for the second pair of Rex pavers and the second spreader. This second B-K rig, equipped with ten Maginniss vibrators, also pulls a transverse finishing machine.



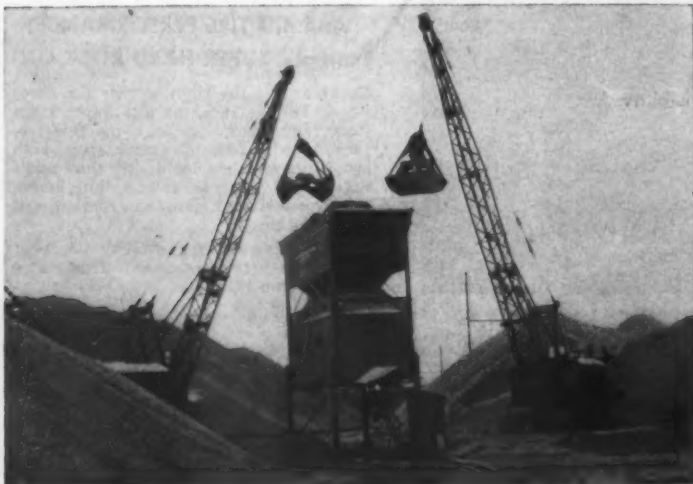
The first of two Lewis machines in the spread is this transverse finisher, with a vibrating screed, which is pulled by the second B-K spreader. This rig, plus the transverse finisher and float, eliminated the need for a longitudinal floating machine.



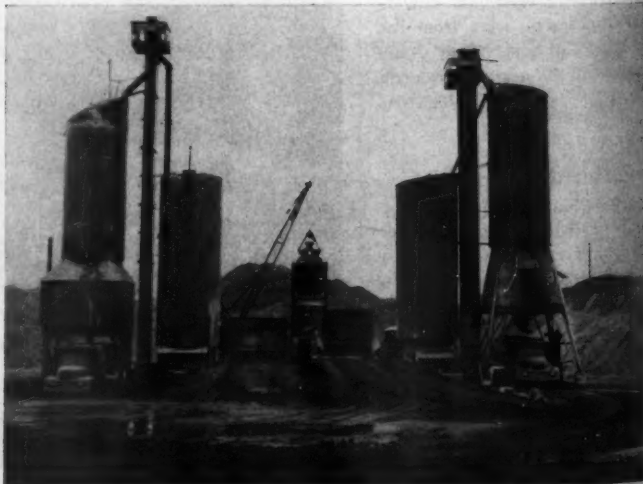
The second Lewis machine, self-propelled, completes the finishing job and floats the concrete. The V-shaped steel float is adjusted so that it removes any irregularities. Finishers kept within maximum tolerance of 1/16 inch.



A rubber hose attachment on the Lewis finisher rides over the slab surface to impart the desired texture to the concrete. The ends of the hose are attached to the bottom of a rear frame, which can be raised or lowered by the operator through hydraulic struts.



Batching operations were done at a fast pace to keep the swift-moving paving train supplied. During peak production, the Heltzel 200-ton 3-compartment aggregate bin, equipped with electronic controls, turns out 360 batches per hour.



A twin batch of cement is turned out about every 19 seconds through the use of electronic controls in this cement-batching setup. Heltzel storage and batching silos are at left, and Blaw-Knox storage and batching silos are at right.

Using a dynamic and efficient paving spread, together with a batch plant turning out 1,900 to 2,300 batches per day, C. J. Langenfelder & Son, Inc., Baltimore, Md., put down over 2,900 linear feet of pavement each workday at Olmsted Air Force Base, Middletown, Pa. The work was for a 10,000 x 200-foot runway. Paving was handled in 25-foot widths; slab thicknesses varied from 14 to 21 inches.

Four pavers used

Langenfelder used four Rex 94-2 pavers to lead the fast-moving spread, with a pair of pavers batching in front of each spreading machine. All the pavers rode on the same side outside the forms; a pair backed up for each of the two Blaw-Knox auger-type spreaders, and the other pair traveled forward. The lead pavers and spreader placed enough mix to form at least half the slab thickness, while the second paver-spreader combination followed to complete the slab height.

Generally, more than half the thickness was leveled by the first spreader to ease the workload of the second machine. The first spreader not only trimmed the batches to the desired elevation, but also pulled a total of ten Maginniss electric vibrators through the freshly poured concrete. Spaced on 30-inch centers, starting 15 inches from the forms, these rear-mounted vibrators pen-

CONTRACTORS AND ENGINEERS

trated the above the concrete. pleted by spreader. supplied while a fifth har wetted paving sp

The sec of the tw used in t single vi that han strain-a This tra the sprea powered with a pa only the second rig finishing racy, but the slab

Floating steel floe tached to The elev fully ad over the moved a unique f chine, kn and floa pulling a of the sl attached frame, w ered by t lic stru to the re

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Norm ing four least tw be requi floating total of erators With Le machine quired; dinal flo An add

MARCH

with jet speed

A Cat No. 12 grader with Roadgrader Gauge blade extensions trims the final grade of the paving lane. It works between the steel forms and the completed slab.



trated the slab to a point 2 inches above the subgrade to consolidate the concrete. Consolidation was completed by the vibrators of the second spreader. Water for the pavers was supplied by six 2,000-gallon tankers, while a fifth tanker with a side sprayer wetted the subgrade ahead of the paving spread.

The second spreader also pulled one of the two Lewis finishing machines used in the spread. The rig had a single vibrating transverse screed that handled its assignment without strain—and without an operator. This transverse finisher, pulled by the spreader, was followed by a self-powered Lewis finishing rig. Equipped with a pair of transverse screeds, with only the lead screed vibrating, this second rig not only completed the slab finishing with a high degree of accuracy, but also handled the floating of the slab surface.

Floating was done with a V-shaped steel float suspended from and attached to the rear of the machine. The elevation of the float was carefully adjusted so that the rig rode over the concrete surface and removed any irregularities. Another unique feature of this second machine, known as a transverse finisher and float, is that it was capable of pulling a rubber hose across the width of the slab. The ends of the hose were attached to the bottom of a rear frame, which could be raised or lowered by the operator through hydraulic struts. The frame and hose were to the rear of the V-shaped float.

This machine operated so fast that it was able to make many passes over the surface and still keep up with the paving spread. Whenever the rig backed up, the screeds, float, and rubber hose were raised by the operator. Rigid paving tolerances, allowing a maximum of 1/16 inch across the 26-foot paving lane, were maintained by these Lewis machines.

Reduces crew

Normally, in a paving spread having four pavers and two spreaders at least two transverse finishers would be required, as well as a longitudinal floating machine. This would give a total of three machines and three operators behind the second spreader. With Langenfelter's spread, only two machines and one operator were required; this eliminated the longitudinal floating rig behind the spreader. An additional saving in labor was

(Continued on next page)



PROJECT PAYDIRT pays off for you again

NEW Caterpillar No. 933 Series F Traxcavator delivers up to 22% more production

The new Caterpillar No. 933 Series F Traxcavator with a larger, 1 1/2 cu. yd. bucket is ready now to set new production records. It is the latest achievement of Caterpillar's "Project Paydirt*."

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The slag, put down in seven 6-inch lifts, is compacted by a Ferguson 50-ton pneumatic roller that has been loaded to 60 tons by having its tires filled with water. The roller is pulled by a Cat D8.

(Continued from preceding page)

realized, because only two hand finishers were used instead of the four normally required.

A Rex spray machine, bringing up the rear of the paving train, sprayed a white-pigmented curing compound across the slab. This permitted forms to be stripped the following day. The adjacent 25-foot paving lanes formed longitudinal joints that were keyed and doweled by the steel forms used. For slab thicknesses of 12 to 15 inches, 1 1/4-inch-diameter transverse dowels were spaced on 15-inch centers along the longitudinal joints. For thicknesses of 16 to 20 inches, 1 1/2-inch-diameter dowels were spaced on 18-inch centers.

Setting forms and grade

Langenfelder had over 10,000 linear feet of Blaw-Knox and Rex forms on the job. The contractor kept at least 3,000 to 4,000 linear feet of forms set in place ahead of the pavers at all times. Steel form stakes were driven by an air hammer powered by a truck-mounted Chicago Pneumatic air compressor. Generally, only a single line of forms was required, since paving was done against the adjacent completed slab.

A Caterpillar No. 12 motor grader, equipped with Roadgrader Gauge blade extensions, was used to trim the subgrade ahead of the paving operations. The grader was followed by a Buffalo-Springfield 3-wheel roller, which pulled a Cleveland Trailgrader to smooth out the final grade. This was checked with a scratch board pulled along the forms. Any excess material was removed by a Michigan 125A front-end loader.

Longitudinal joints were formed by shaping the space between the paving lanes, but the transverse joints were formed by sawing. Langenfelder sublet the sawing and filling of these joints to Pavement Specialists, Inc., Kansas City, Mo. Transverse joints were spaced on 25-foot centers, and their depth varied according to the slab thickness. The depth was determined by dividing the slab thickness by four.

The 10,000-foot runway consisted of different slab thicknesses. The center 6,000 feet was made up of a 14-inch slab, while each of the 2,000-foot end sections consisted of a 1,000-foot-long, 18-inch-thick center stretch with two 500-foot-long, 16-inch-

thick end sections. These 2,000-foot end sections were made with thicker slabs, especially the 1,000-foot center strip, because this is where most jet aircraft touch down when landing. Besides this runway work, the contractor had to pave 16 and 19-inch-thick taxiways, and 21-inch warm-up aprons and taxiways, to tie the new runway into the existing air-base facilities.

Concrete batch plant

Langenfelder's batching setup included a Heltzel 200-ton 3-compartment aggregate bin capable of charging 360 batches per hour; and two cement-batching facilities, one a Blaw-Knox and one a Heltzel, each with storage and batching silos. The Blaw-Knox storage and batching silos each

had an 1,800-barrel capacity, while each of the Heltzel silos had a 1,400-barrel capacity.

Aggregates, consisting of 3A and 2B stone, plus sand, were hauled to the plant by trucks and stockpiled in piles—a pair for each size. Three Northwest Model 6 cranes, equipped with rehandling buckets, were used to charge the aggregate-bin compartments from each stockpile. Electronic controls made the weighing and batching at the bin an automatic operation. Here the batch trucks, each with a 4-batch capacity, were charged with two batches simultaneously.

Bulk cement was delivered to a cement-loading site not far from the plant by bottom-dump rail cars. The rail cars used two undertrack hoppers to feed a pair of silo setups. Each



White Oak Excavators meet the deadline at Hogback Dam:

Texaco Plan lets White Oak lube h

Contractor reports Texaco Simpli



THESE SIX TEXACO LUBRICANTS, shown here with White Oak Excavators' Vice President, John Toffolan, and H. F. Porter, Texaco representative, permit their rig to lubricate all major equipment.

RIVERTON, CONN.—White Oak Excavators, contractors for Connecticut's Hogback reservoir dam, found that the Texaco Simplified Lubrication Plan made their truck-mounted lube rig more useful than ever before.

"The Texaco Plan is really essential to getting the use of our lube rig," says John Toffolan, one of White Oak Excavators owners. "Our Texaco Plan calls for six lubricants to handle everything on the spread. We take our whole lubricant inventory right out into the field. That's especially important to us because we use equipment made by practically every manufacturer."

Using no more than six lubricants on this \$4.2 million project has other advantages, too. For example, the inventory (six lubricants instead of 15 or 20) means

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setup consisted of Blaw-Knox storage
and batching silos—also with 1,800-
barrel capacities. Trucks were used
to transfer the cement to the hoppers
at the cement-batching silos at the
plant. Electronic controls also made
the cement batching at the plant au-
tomatic and helped maintain produc-
tion at 19 seconds per twin batch. A
Hager 185-cfm air compressor was
used to supply air to the plant; elec-
tric power was purchased from the
base facilities. Langenfelder used 16
to 22 International batch trucks to
haul the 1½-yard batches to the pav-
ment.

Crushed-slag subbase

The contractor, as part of the \$12,-
700,000 project, had to haul over 5
million cubic yards of crushed slag to

build up an area for the new runway.
This was done by pushing the crushed
slag out into the Susquehanna River
to extend the existing shore line for
an average depth of about 24 feet.
Slag, furnished from the Bethlehem
Steel plant downstream, was hauled to
the job by seven Athey 50-ton wagons,
pulled by Cat DW20's, and 12 Euclid
38-ton bottom-dumps. Eight Euclid
rear-dumps, loaded by two Northwest
shovels, were used to assist the bot-
tom-dumps during the early phases of
the filling operations.

Langenfelder then used six Lima 6-
yard shovels and a Marion 4-yard
shovel to load the Athey and Euclid
bottom-dump hauling fleets that
handled most of the borrow place-
ment. Two Cat D9 tractor-dozers
were kept busy spreading the fill so



An Athey 50-ton wagon, pulled by a Cat DW20, dumps crushed slag in this area to build up the new runway. Al-
together, 5 million cubic yards of slag was needed for this
item. A Cat D9 waits in the background to spread the fill.



HOGBACK PROJECT involves an earth and
rock-fill dam to supply water for the greater Hart-
ford, Conn. area. It is 135 feet high and 800
feet wide, and will create a 6½-billion gallon
reservoir on the west branch of Connecticut's
Farmington River. The dam is designed to dis-
charge 92,000 cfs. It also has a 3 mile tunnel to
the Barkhamstead reservoir, and a diversion tun-
nel designed to carry flood waters up to 31,500
cfs. White Oak Excavators are moving about
600,000 yards of gravel, earth and sand; 500,-
000 yards of rock; 95,000 yards of impervious
soil core; and 30,000 yards of concrete. This
requires a full range of construction equipment,
all fully protected by the six lubricants compris-
ing the Texaco Simplified Lubrication Plan.

that it could be compacted.

The lifts were compacted by a Fer-
guson 50-ton pneumatic roller pulled
by a Cat D8. The roller was loaded to
60 tons by having its tires filled with
water. Firestone Tire & Rubber Co.
handled the filling operation, which
also served as a safety check against
possible tire blowouts.

Seven 6-inch lifts of crushed slag,
placed by two Pettibone Roadmixers
and compacted by the Ferguson
roller, formed the top 42-inch-thick
subbase for the new runway. A dike
30 feet high and almost three miles
long was built along the edge of the
Susquehanna River. Over 250,000
cubic yards of impervious material
had to be placed on the inside face of
the dike to prevent seepage on the
runway fill. Riprap, about 1 foot
thick, protects the outside river face
of the levee against erosion.

Personnel

Russ Strohm was the project man-
ager on the job for Langenfelder &
Son. Carly Mathern and John Wool-
folk were the concrete superintend-
ents. Doc Santer was the paving fore-
man; Hans Lamberson, the plant
foreman; and Harry McGonigal, the
grading superintendent. Rufus Greene
was the resident engineer for the
Baltimore District, U. S. Army Corps
of Engineers.

THE END

Flintkote appoints two

B. J. Mulligan has been promoted
to assistant general sales manager of
the Special Products Division, The
Flintkote Co., New York City. He was
formerly sales manager for the com-
pany's Insulrock Division.

Edward W. Douglass has been
named general sales manager of the
Insulrock Division. He will supervise
and manage the sales organization
of the division and the distribution of
its product.

Thor moves branch office

The Chicago sales and service
branch of Thor Power Tool Co.,
Aurora, Ill., has been moved to the
company's SpeedWay Motor Division
plant at 1834 S. Laramie Ave., Chi-
cago. Additional space and facilities
at the new location will permit im-
proved service for distributors and
users of Thor portable power tools.

Lubricating handle all field lubrication

lubrication Plan "essential to best use of lube rig"

ing, less storage space, less chance for misapplica-
And, of course, the Texaco Simplified Lubrication
Plan developed for the Hogback project comprises lubri-
cants specifically chosen to meet the requirements of that
particular job.
Here are the six lubricants, shown at the left with
Tefflon: (1) For engines: *Texaco Ursa Oil Heavy*
(2) for chassis, wheel bearing and general grease
lubrication: *Texaco Marjak Multi-Purpose 2*; (3) for
hydraulic units: *Texaco Regal Oil R & O*; (4) for trans-
missions and differentials: *Texaco Meropa Lubricant*;
for wire rope and open gears: *Texaco Crater*; (6) for

track rolls: *Texaco Track Roll Lubricant*.

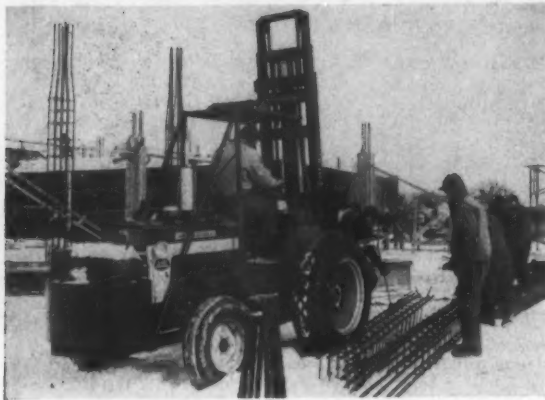
You'll save time and money by letting a Texaco Lubri-
cation Engineer work out a Simplified Lubrication Plan
tailored to the specific requirements of your project. Just
call the nearest of
the more than 2,000
Texaco Distributing
Plants, or write The
Texas Company,
135 East 42nd
Street, New York
17, N. Y.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For more facts, use Request Card at page 18 and circle No. 204



A NEW USE for this International Harvester utility wheel tractor: setting steel for reinforced-concrete columns in the Fuels Technology Center at Argonne National Laboratory near Lemont, Ill. The rig also set the prefabricated wooden forms for the columns.

NOW A LORAIN LOADER



ONE-FOOT TRAVEL CONTROL for forward and reverse—plus acceleration—boosts daily output. Operator's hands are free for other operations.

SEE THE NEW LORAIN MOTO-LOADER ML-157 YOU HELPED DESIGN

Here's the new 2-yd Lorain Moto-Loader. It's loaded with features voted most important by users to speed operations, build profits.

It's your kind of front-end loader with the speed, maneuverability and controls that pay off best for you.

Here are some of the features you'll find:

- a **dumping height** that lets you load higher trucks and hoppers
- a **forward reach** that lets you dump farther out, load faster
- a **bucket tilt-back** that gets and keeps a full payload every time
- a **capacity and balanced weight distribution** that lets you carry 7,000 pounds without bounce or rocking
- a **one-foot travel direction and speed control** that completely frees operator's hands for other operations plus a winning combination of other design features that you would expect on this 2-yard loader built by Lorain. Four wheel drive. Low center of gravity. Planetary wheel drive. Power booster steering. Power shift transmission. Torque converter. Four wheel hydraulic brakes.

See this Lorain Moto-Loader go through its paces. Your Lorain Moto-Loader distributor will set up a demonstration. Contact him for details.

LORAIN®

THE THEW SHOVEL COMPANY, LORAIN, OHIO

Book of ASTM standards for building materials

The "1958 Book of ASTM Standards, Part 4: Cement, Concrete, Mortars, Road Materials, Waterproofing Soils" is available for \$12 from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Divided into sections, the book covers cement—specifications and methods of testing; lime; gypsum; magnesium oxychloride and magnesium oxysulfate cements; chemical resistant mortars; and mortar for unit masonry. Other subjects included are mineral aggregates, concrete, and nonbituminous highway materials; bituminous materials for highway construction, waterproofing and roofing; creosote; soils; thermometers; general testing methods; and tentative revisions of standards.

NCA elects officers

W. R. Wood has been elected president of the National Constructors Association, an organization of nationally operating engineering and building firms engaged in the design and construction of industrial facilities.

At the same time, Donald W. Darnell was elected vice president, and he and three others—R. L. Cashen, W. Earl Dunn, and J. W. Smith—were made members of the executive committee.

Yardney Electric names

Paul L. Howard has been named assistant vice president in charge of technical field operations at Yardney Electric Corp., New York City, manufacturers of Silvercel and Allead batteries. Formerly director of technical operations, Howard will coordinate technical relations with company customers and assist them in working out their battery requirements.

Rogers Construction news

Judge Harold M. Kennedy and F. Briggs Dalzell have been elected members of the board of directors of the Geo. W. Rogers Construction Corp., New York City, specialists in building marine facilities and industrial plants.

A former United States Judge for the eastern district of New York, Judge Kennedy has been associated with the New York City law firm of Burlingham, Hupper & Kennedy since 1952. Dalzell is president of the Dalzell Towing Co., Inc., New York City.

Film on Cat D9 tractors

"Report on the Giant" is a new 11-minute sound and color film released by Caterpillar Tractor Co., Peoria, Ill. The film reports on work being done by Cat D9 tractors throughout the nation on such jobs as bulldozing, ripping, pushing, and skidding logs.

Showings can be arranged through any Caterpillar dealer.

For more facts, circle No. 205

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"We own four Huber-Warco graders and know from experience that they are tough machines. We can depend on them for all types of grading work."

**Lloyd Bruns, Vice President
Bruno Coal Company**

Bruno uses H-W Graders on Ohio job

When Bruno Coal Company, a highway contractor of Zanesville, Ohio, got the contract for a six-mile section of the new Ohio Freeway, they put two of their Huber-Warco graders on the job.

The Bruno contract is for a portion of the new road that will link Cincinnati and Cincinnati, Ohio. This highway has been designated as Ohio State Route 1, and will be a vital link in the nation's system of federal roads.

A total of two million yards of dirt will have to be moved on this project before the completion date of August, 1959. A Huber-Warco 5D-190 and a 4D-115 are constantly busy keeping the haul roads clear, and trucks on time.

One big cut in this section is 40 feet deep and 2,000 feet long. The largest fill is 70 feet

deep and extends 1,000 feet on each side of a bridge over Conneaut Creek. Bruno will also handle two and one-quarter miles of ramps and interchanges.

A six-inch gravel base will be applied to help the drainage of water from under the road. The concrete pavement will be poured to a ten-inch depth. The dual lanes of this highway will be 24 feet wide, separated by a 54 foot median. Each lane will have five foot stabilized shoulders.

Bruno makes sure that their equipment is always in top shape to deliver the most work. To minimize downtime on the job, all equipment is serviced between the two 10-hour shifts. On this job they are working a six-day week.

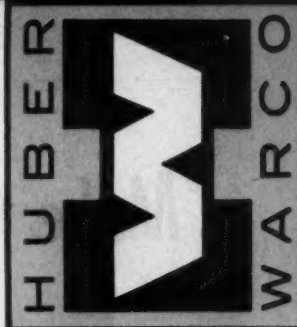
Payloads keep on the move with this Huber-Warco grader clearing the way.

When asked for his comments on the Huber-Warco 5D-190, Edgar Mathoney, the operator stated, "It's the best grader I've seen for haul roads. The torque converter and power-shift transmission really let the machine move dirt fast." He continued, "Its extra length and weight make it very good on bank sloping. It's sure dependable."

Why not investigate the merits of a Huber-Warco motor grader for your construction jobs. The BONUS features of Huber-Warco graders give you more machine for the money . . . more work done faster . . . and dependability.



Whatever the grading assignment, Huber-Warco motor graders work harder and faster.



TANDEM ROLLERS



MOTOR GRADERS



WHEEL ROLLERS



MOTOR GRADERS

Huber-Warco Company

For more facts, use Request Card at page 18 and circle No. 206

Small asphalt plant gives peak performance on blacktop project

The top 1½-inch course of the 3-inch mat for State Route 14 near Sutton, Nebr., is laid by a Barber-Greene finishing machine. The rig laid some 900 tons of hot-mix daily.



Make the Grade in Profits



Bring **NOWNess** to Your Operations
...with ASSOCIATES Equipment Financing

To earn maximum profits, replace and upgrade your equipment when needed, without depleting vital working funds ... finance it through Associates!

Associates financing experts will work closely with you and your equipment dealer to plan arrangements and terms best adapted to your own situation. Whether you select straight-line financing, or an accelerated method, Associates will speed-the-deal for you with a minimum of red tape ... through one of over 200 local branch offices.

Contact your equipment dealer now for further information on Associates financing. Send coupon today for "Money to Grow On" ... it's free!

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DISCOUNT CORPORATION

Associates Building, South Bend 24, Indiana

NOW ... expand and meet competitive situations by purchasing new equipment when it's needed.

NOW ... benefit from the cost-saving advantages of new equipment ... pay for it from additional profits.

NOW ... make necessary additions and replacements without suddenly draining vital working funds.

NOW ... take advantage of accelerated write-off methods of figuring depreciation in the financing of your equipment.

NOW ... enjoy greater operating efficiency; reduce maintenance and operating costs by updating and upgrading equipment.

SEND FOR YOUR FREE COPY TODAY!

"Money to Grow On" is a new forty page book which explains the "mechanics" of equipment financing, fixed asset loans, advances for special situations and other Associates financing services.



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☐ Please send information on Associates financing:

Type of equipment _____

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Title _____ Company Name _____

Address _____

City _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 207

Good men, getting the most out of good equipment, rolled out the blacktop on a state highway job near Sutton, Nebr.

The small continuous plant, pushed to peak production, averaged nearly 900 tons a day. With proper maintenance, the Barber-Greene Model 845 kept pouring out the hot-mix and had only a few hours' downtime.

The crew of George Werner & Son, Clay Center, Nebr., was not building the most important highway in the country, but the men were doing their darndest to make it a good road. From the bottom of the 11-inch base to the top of the 3 inches of asphaltic concrete, they were putting together a long-lasting road with a smooth riding surface.

Just to make sure they accomplished what they were trying to do, the Nebraska Department of Roads had resident engineer Kenneth Huson on the job. His small crew kept the road going straight and true, checked on the quality of the asphalt, made sure the base course was properly compacted, and handled the many other details of inspection.

Werner had a contract for grading and paving eight miles of 2-lane highway on State Route 14 near Sutton. The \$359,924 contract called for 19,680 tons of hot-mix.

The asphalt went down in two 1½-inch courses. It was supported by a 4-inch soil-aggregate base resting on 7 inches of granular subbase.

The plant

The contractor had a small, well balanced plant. In its second season of operation, it was in excellent shape. At that particular time, some 50,000 tons had been run through it with less than 5 hours of downtime.

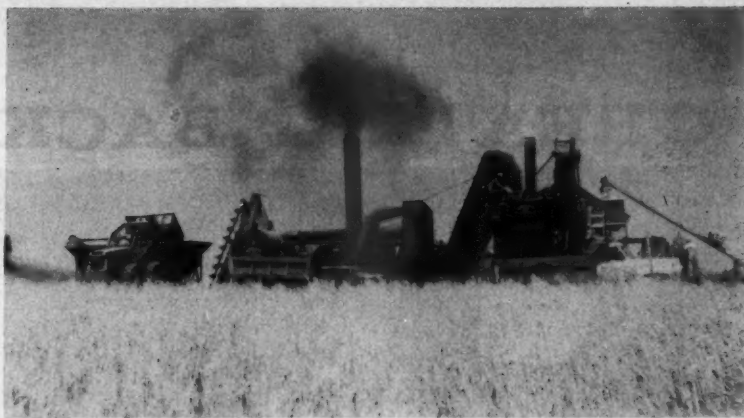
The Barber-Greene Model 845 continuous plant was rated in the 60-ton-per-hour range. During good weather, however, Werner had no trouble keeping production up between 85 and 90 tons per hour.

The two sizes of aggregates consisted of sand and minus 1-inch washed gravel. The material was hauled in by Omaha Standard and Fruehauf bottom-dump 10-yard trailers, and dozed into stockpiles by a Cat D7. A Michigan 125A loader shovelled the sand and gravel from the stockpiles to the three cold feeder bins.

Proportioned by the reciprocating

CONTRACTORS AND ENGINEERS

Production of this Barber-Greene Model 845 continuous hot-mix plant averaged between 85 and 90 tons per hour on the job. A Michigan 125A loader, left, feeds sand and gravel to the cold feeder bins. The B-G 835 dryer is equipped with a cyclone-type dust collector.



loaders at the base of the bins, the material passed into the cold elevator and then to the B-G Model 835 dryer. The dryer was equipped with a Model 832 cyclone-type dust collector. Fines, salvaged by the dust collector, were reintroduced at the boot of the hot elevator.

The material was carried from the dryer to the screens by the hot elevator, graded into two sizes, and dropped to the gradation-control bins. After the two sizes of aggregates were accurately proportioned by a continuous apron feeder, they were carried by the mixer elevator to the pugmill.

Limestone dust added for filler

Since the aggregate was washed and screened, it was low on fines. Fines, in the form of limestone dust, were metered out to the aggregate at the base of the mixer elevator, which led to the pugmill.

The powdery white dust was not easy to handle. It arrived in big covered trailers and was dropped through trap doors in the bottom of the trailers to an underground collection hopper. From the hopper, a Baughman 9-inch screw conveyor carried the material to a 25-ton storage bin. Then a second Baughman screw conveyor carried the dust to the Barber-Greene metering bin, where it was delivered to the boot of the mixer elevator. Compressed air continually fluffed up the limestone dust from below to aid the flow of material in both the storage and metering bins.

Seven per cent of limestone dust was added to 79 per cent gravel and 14 per cent sand to form the aggregate mixture. The aggregate was mixed with 4.5 per cent asphalt for the binder course and with 4.7 per cent asphalt for the surface course. Asphalt was heated by a Bros Model H20 heater.

On the road

After being weighed on Thurman scales, Ford F600 single-axle dumps sped the hot-mix from the plant to the Barber-Greene Model 879B finishing machine. The machine laid a 1½-inch mat for half the width of the 24-foot roadway.

The finisher was followed by a Huber 8 to 12-ton tandem roller for the breakdown. An identical roller put the final squeeze on the hot-mix

(Continued on page 15)



Why contractor calls B.F. Goodrich tires "the best tires for the job!"

KILLIAN-HOUSE CO. constructs roads and bridges within a 100-mile radius of San Antonio, Texas. 143 pieces of rubber-tired equipment are at work, including 30 flat bed trucks, 10 scrapers, 24 dump trucks, 30 pick-ups, 12 road rollers and 12 water trucks. The company uses B.F. Goodrich tires on this fleet because, says Partner Jack House, "They are the best tires for the job."

For example: Traction Express tires average 75,000 miles of service where previous makes gave considerably less; Tractor Grader tires are being retreaded as many as 4 times; on the new Rock Service Tubeless tires above, the company estimates retreads will save them 30% over other makes.

The new B.F. Goodrich Rock Service

tire has an enormous, double-chevron tread that defies rock cuts and bruises, grips the ground for full traction in forward or reverse. Under the tread is the B.F. Goodrich FLEX-RITE NYLON cord body that withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This is why the FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over.

See your B.F. Goodrich Smileage dealer today and find out how you can save on tires for all types of off-the-road jobs. He's listed under Tires in the Yellow Pages of your phone book. B.F. Goodrich Tire Co., A Division of The B.F. Goodrich Co., Akron 18, Ohio.

Enter the B.F. Goodrich Truck Tire Mileage Contest. You can win a Thunderbird or Corvette or one of 310 other prizes. See your B.F. Goodrich dealer for entry blanks.

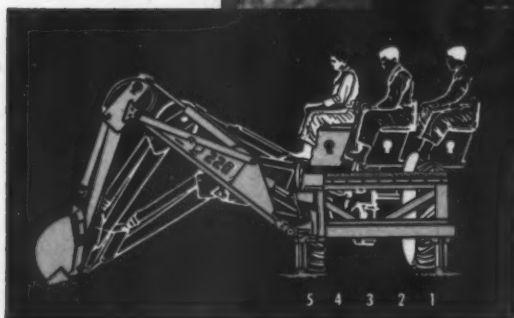


B.F. Goodrich truck tires

For more facts, use Request Card at page 18 and circle No. 208

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the **GREATEST BACKHOE** of ALL



GETS READY TO FLUSH DIG IN LESS THAN 5 MINUTES

To slide the Davis 220 into any one of five digging positions, simply loosen four cap screws, then move the mast assembly on the slide rail by actuating the boom cylinder. Retighten. Notice how seat moves along with the digging assembly so you sit right over your work for unmatched visibility. Rotary hydraulic boom swing cylinder provides 200° continuous operating arc.



the **POWERFUL** New **M-F Davis 220**

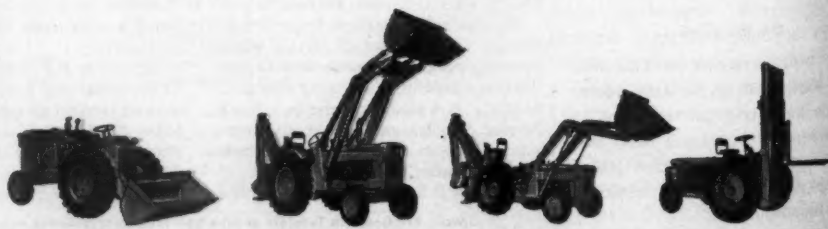
with **Hydra-Slide Positioning**
for Digging Assembly and Operator

The Davis Backhoe — already accepted as the industry's pattern setter, and the first machine ever to dig flush, has many new functional features that give you more profit-making advantages than any other backhoe.

The new Massey-Ferguson Davis 220 now has "Hydra-Slide" positioning so you can easily move the entire digging assembly — including the operator's seat so you're positioned right over your work — to any one of five digging positions in less than five minutes. You always look directly into the trench when digging and face the bucket when dumping.

It has new power, too, with 14,000 pounds breakaway. Increased operating pressure to 2,150 psi, combined with larger bucket cylinder shaft, gives 50% faster dumping.

All around it's a better, more powerful backhoe, with more utility than any other on the market. A demonstration by your dealer will prove it. **Write for his name.**



Work Bull 1001

Work Bull 303 with 500 Loader and Davis Backhoe

Work Bull 202 with Davis Loader and Backhoe

Work Bull Fork Lift

MASSEY-FERGUSON INDUSTRIAL DIVISION
1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

For more facts, use Request Card at page 18 and circle No. 209

CONTRACTORS AND ENGINEERS



A Huber-Warco 8 to 12-ton roller compacts the asphaltic concrete behind the finisher. Another of these rollers brought the material to a 95 per cent density.

to give it a 95 per cent density.

Building the base

Realizing that asphaltic concrete is no better than the material under it, Werner took extra care in mixing and compacting the 7 inches of granular subbase and 4 inches of soil-aggregate base.

The bases were made up of a mixture of about three different types of materials: gravel, sand, and soil binder. The unmixed materials were hauled in by truck and dumped on the roadway—so many loads per station.

Two Cat No. 12 graders, operated by an expert father-and-son team, carefully mixed the materials. After the dry mixing, water was added, and the materials were remixed. Compaction to 100 per cent density was done by a Terrapac vibrating roller and a Bros 13-wheel pneumatic roller. The spraying of the prime and tack coats was handled by an Etnyre distributor.

Personnel

Phil Werner headed the project for the contractor. His key men were Raymond Peterson, plant manager; Gene Burmester, foreman on the lay-down; and Frank Presnel, base foreman. For the Nebraska Department of Roads, Kenneth Hutson was resident engineer. He was assisted by L. J. Webb, junior engineer.

THE END

Book shows dwellings that meet public needs

An illustrated survey of outstanding multiple dwellings is contained in "Apartments and Dormitories," a book by the editors of *Architectural Record*. The apartments and dormitories, chosen from many parts of the world, range in size from a 2-family house to a project planned for 80,000 people.

Priced at \$8.95, the book may be purchased from the publisher, F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y.

Connecticut highway news

The District 1 headquarters of the Connecticut State Highway Department have been moved to a new location in Hartford. The new mailing address is P. O. Box 2188, 170 Douglas St.

Raymond International to build offshore units

Two joint-venture contracts have been awarded to Raymond International Inc., New York City, for constructing oil-loading facilities in the Gulf of Arabia—one offshore from Iraq, the other offshore from Iran. Work on the multimillion-dollar projects will be sponsored by the company's subsidiary, Raymond International (U. K.) Ltd., London.

The Iraq project will be a deep-water tanker berth of island design, consisting of a main dock area for tanker loading, two mooring dolphins,

a dock berth, and an accommodation island for crewmen. Located in a minimum water depth of 70 feet, the structure will be 1,300 feet long and have a maximum width of 250 feet. This project will cost over \$12 million.

A fuel-oil-loading steel jetty and boat harbor comprise the Iran project, which is priced at \$5 million. Raymond is also a partner in the management contract for the entire development, which is estimated at \$60 million.

Decisions! Decisions!

Not with THE BIG E

the tractor that thinks for you Automatically selects the right power ratio for any load or strain!

Just one of the many job-time and man-hour saving features of the modern Eimco 105 is the exclusive torque converter-Unidrive team, the only drive and transmission that is engineered with oil cooled, positive engagement clutches that never . . . really never . . . need adjustment. No master-clutch to wear out! No clutch pedal to push! No gears to shift!

You get a smooth, powerful drawbar pull or push that adjusts automatically, through an unlimited number of ratios, to the load and strain . . . even if the tractor is at a standstill! The Eimco 105 engine will never stall through the torque converter.

And you get all the other exclusive Eimco 105 features too . . . upfront full visibility operator location; dual final drives that set a new standard in maneuverability; simple controls that increase work efficiency and output.

Let an Eimco sales-engineer demonstrate the many advantages of the modern Eimco 105. Contact the sales office nearest you or The Eimco Corporation, P. O. Box 300, Salt Lake City 10, Utah.

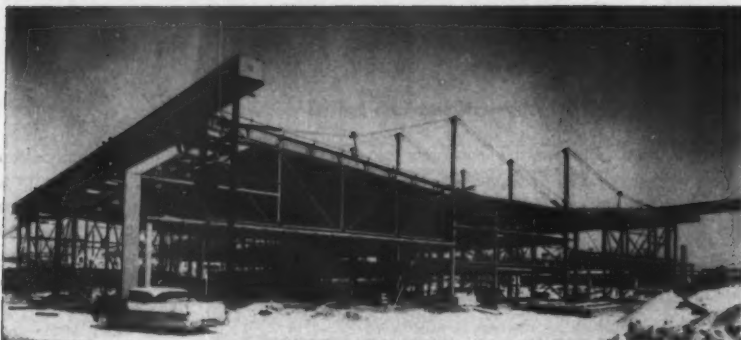


THE EIMCO CORPORATION • SALT LAKE CITY, UTAH

EXPORT OFFICE, 31-32 SOUTH STREET, NEW YORK, N. Y.

BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

For more facts, use Request Card at page 18 and circle No. 210



The roof for the new hangar at Hanscom Air Force Base, Bedford, Mass., is suspended from columns in the central shop and heating-plant area, leaving hangar doors free of obstructions. Wire-rope cables providing support run from the outer ends of roof support beams to extended columns of the shop area, then down to the roof level.

Suspended roof of new hangar carries structural loads

A \$1,700,000 double hangar of unusual design, and the first of its type to be erected in New England, is now under construction at Hanscom Air Force Base, Bedford, Mass. The new structure will permit Raytheon Co. to reduce the time now required to run modification and electronic tests on missiles, aircraft equipment, and associated units.

A suspended roof, which carries a substantial part of the structural loads, is the principal feature of the building. Only the columns of the shop area are necessary to support the roof, and planes may be brought in through hangar doors at the east and west ends. The south side will also have hangar doors which may be opened for smaller planes.

The method of cantilevering the large roof areas is unusual. The roof support beams, each a 33-inch wide-flange rolled beam about 80 feet long, are supported at one end on a pin connected to a bracket on a column of the central shop area. A pair of wire-rope cables, attached to the outer end of each of these beams and also near the midpoint, is run up over the extended column of the shop area on which the inner end of the beam is supported, and then down to the column on the other side of the central shop area where it is connected at rooftop level.

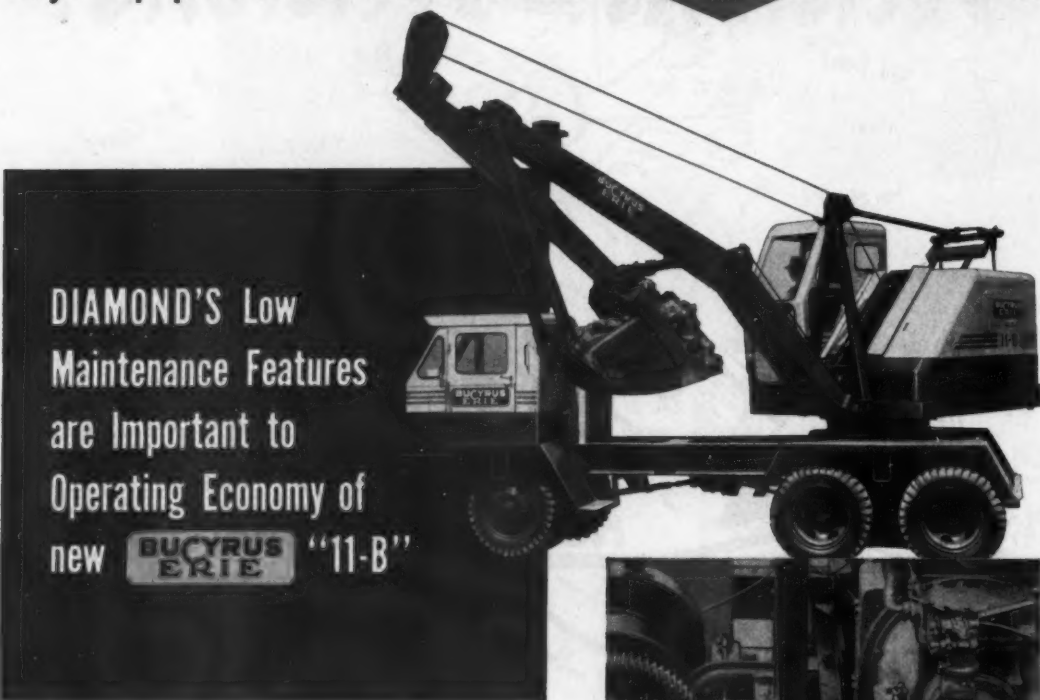
The elongation of these tie-back cables under load would have caused the upper section of the central shop columns to bend out of the vertical if these columns had not been initially pre-loaded to bend them from the vertical in the opposite direction.

The outer ends of the roof support beams are tied together by box girders, which also carry tracks for the hangar doors at the west and east sides. The tracks for the upper edges of the doors on the south side are carried by a trussed framework which also supports the prefabricated metal panels above the doors. These panels, faced on both sides with sheet metal, are insulated and weigh seven pounds per square foot. The structure's interior walls and partitions, as well as its north wall, consist of concrete blocks.

The hangar doors on the south side will be vertical doors that will roll along a track on the ground and be guided by the top support.

Door sections at the east and west ends will be the main access hangar doors. Each end will have six door sections. Each section consists of a vertical piece about 27 feet high, hinged at the top to a piece sloping upward to the hangar roof at an angle of approximately 50 degrees. The weight of the door is carried principally on the track on the ground, but also partly on the track on the box girder at the edge of the

Major Equipment Manufacturers Use **DIAMOND** Roller Chain



DIAMOND'S Low Maintenance Features are Important to Operating Economy of new BUCYRUS-ERIE "11-B"

●Bucyrus-Erie designed the new 11-B Transit Crane-Excavator to provide contractors with a versatile, hard-working unit that can be maintained easily and economically.

Like other leading equipment builders, Bucyrus-Erie specified DIAMOND Roller Chain for dependable power transmission . . . and for DIAMOND's proven ability to absorb the shocks and abuse of continuous day-in, day-out service.

Your DIAMOND Distributor has all types and sizes of roller chain in stock, ready for immediate delivery. Look in the Yellow Pages of your telephone directory under "Chains" or "Chains, Roller" . . . or write to factory for Catalog and address of your nearest DIAMOND Distributor.

DIAMOND CHAIN COMPANY, INC.

A Subsidiary of American Steel Foundries

Dept. 487, 402 Kentucky Avenue, Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

DIAMOND ROLLER CHAINS



Primary chain drive on Bucyrus-Erie Model 11-B is a triple-strand DIAMOND Roller Chain.

Boom hoist drive uses DIAMOND Roller Chain operating over two 48-tooth sprockets. DIAMOND Roller Chains were specified to insure smooth operation under continuous shock-load conditions.

For more facts, use Request Card at page 18 and circle No. 211

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roof. These hangar doors telescope together under the projecting portion of the box girder, thus allowing full-width door openings into the hangar. This angled construction of the hangar doors increases the usable floor area of the building. The hinge at the vertex of the angle allows the doors to deflect as changes in loading conditions on the suspended hangar rods cause a change in the elevation of the box girders at the east and west ends of the building.

The doors are fabricated from channels with a steel and aluminum skin. Each door section covers an area about 37 feet high and 31 feet wide. The aluminum skin is used on the sloping portion, above the hinge at the vertex of the angle to reduce the weight carried on the box girder. The operation of the doors is automatic, and is so set up that three sections move together and simultaneously arrive in place at each end of the box-girder projection.

The structure is designed to be built in two stages, the first of which will be completed in May. This includes the 3-story central shop area and heating plant, and two hangar areas—one to the east and the other to the west of the central shop structure. The second phase, consisting of an additional wing adjacent to the north side of the main structure, may be constructed at any time without interfering with the operation of the primary structure. The hangar areas each comprise about 17,200 square feet of unobstructed floor area.

Large enough to house two B-50's, the building is relatively low in height and will be accessible through front and side telescoping doors. There will be fluorescent lighting throughout, a complete fire-protection system, and a heating system that has been designed for quick recovery when cold air enters through open doors.

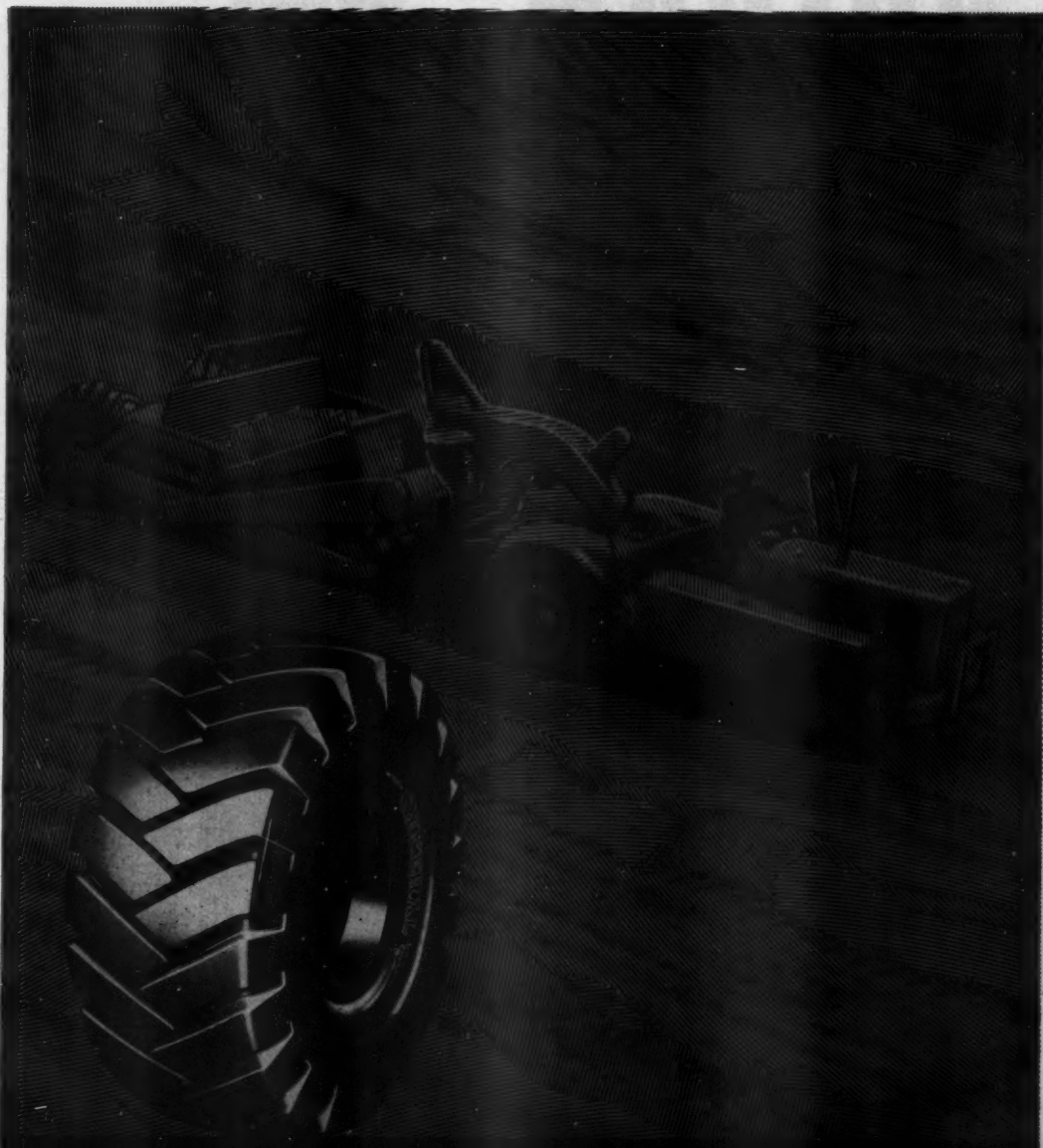
Fay, Spofford & Thorndike, Inc., Boston, engineered the building. Bethlehem Steel Co., Bethlehem, Pa., furnished all steel, including wire rope, shapes, and industrial fasteners. The steel was fabricated and erected by Grolisser & Shlager Iron Works of Boston. S. Volpe & Co., Boston, is the contractor for the work. **THE END**

B-E sales appointments

Three appointments in its domestic sales department for commercial cranes and excavators have been made by the Bucyrus-Erie Co., South Milwaukee, Wis. Paul J. Thiel is sales administration supervisor; Byron A. Haney, product development manager; and Frederick B. Shew, sales development manager. All three men will make their headquarters in the company's home office.



PROTECTIVE RIPRAP IS PLACED along the edge of a newly widened section of the Calumet River located south of Chicago by a Bucyrus-Erie 71-B dragline powered by a GM 6-110 diesel engine and equipped with a 3½-yard bucket.



Proved again and again over the roughest, rockiest going in all the world, **GENERAL** Truck Tires are NYGEN - built to get every job done faster and for less whether it be in logging, construction, quarrying or mining.

Specify GENERALS on your new equipment

THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO

For more facts, use Request Card at page 18 and circle No. 212

VULCAN

A No. 50-C SUPER-VULCAN Hammer Driving "H" Beam Piling and Sheet Piling

Here, as in many thousands of jobs all over the world, VULCAN Pile Driving Hammers and Extractors are doing their work quickly, efficiently and economically. On your next job, specify VULCAN . . . the name you can depend on for the finest in pile driving equipment.



VULCAN

IRON WORKS INC.

327 North Bell Avenue, Chicago 12, Ill.

Manufacturers of Pile Driving Hammers and Pile Extractors Since 1852

For more facts, use Request Card at page 19 and circle No. 213

CONTRACTORS AND ENGINEERS

A modified Euclid S-7 scraper, built on the same principle as the TS-24, does a good job for Knight Bros., Chapman, Nebr., on small work, such as building shoulders and making driveways. Here, traveling at 25 mph between jobs, it tows a trailer with a 500-gallon fuel tank and two big tool chests. An engine at the rear drives the back wheels; both front and rear engines are GM 143-hp, 4-cylinder diesels with torque converters.



Contracting firm builds its own twin-engine scraper

When you want a small machine that's not on the market, you build it yourself.

That's the way Knight Bros. Construction Co., Chapman, Nebr., figured when it wanted a small rubber-tire self-loading scraper. A machine was needed for building shoulders, making driveways, and other small but specialized work.

Since the company's two Euclid twin-engine TS-24's were too big for its finishing and odd-job needs, it set about building a smaller one. Knight Bros. took a Euclid S-7 scraper and mounted an engine at the rear to drive the back wheels. The machine was built on the same operating principle as the larger TS-24.

Both front and rear engines are GM 143-hp 4-cylinder diesel engines equipped with torque converters. The rear engine is operated with air controls by the driver. With all four wheels pushing, the scraper can pick up, in record time, a load that is nearly equal to its bowl capacity of 10 yards.

To give the "tiny twin" more versatility, Knight Bros. added a hydraulically controlled dozer blade to the front end. With the blade, the operator can spread and doze material in spots that a conventional scraper cannot touch.

The scraper often works independently, traveling over the highway from job to job. The rig hits speeds up to 25 mph as it pulls its own 500-gallon fuel tank on a 4-wheel trailer. On the tank are mounted two large tool chests.

When Sam Wells, the operator of the rig, is on the job, he's a one-man earthmoving team. He picks up his own load and spreads it. He does his own dozing. He fuels and greases his own rig, and he is his own mechanic.

The "Little Bull," as the rig is named, is equipped with everything but a cash register for taking in the money it makes. THE END

Pomeroy buys Gerwick

J. H. Pomeroy & Co., Inc., has purchased all of the stock of Ben C. Gerwick, Inc. Both companies are among San Francisco's oldest and largest heavy-construction and engineering firms. The Gerwick firm will retain its name.

ESTIMATED TRANSPORTATION COST ANALYSIS
Submitted by **HOBBS TRAILERS**

Completed for Mr. JOHN JONES, JONES TRUCKING COMPANY, 609 N. MAIN, FORT WORTH, TEXAS. WITH 35 CABLE DUMP TRAILER.

From Name: 609 N. MAIN, FORT WORTH, TEXAS. Address: 609 N. MAIN, FORT WORTH, TEXAS. Phone: 123-4567. Rate: \$1.00 per trip. Trip per year: 100. Total cost: \$100.00.

OPERATING COST

1. Trailer—See Time	1000 X 30	\$30,000.00
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THE MAN FROM HOBBS CAN

DETERMINE YOUR COST-per-YARD IN ADVANCE with HOBBS SCHONROCK CABLE DUMP TRAILERS

Now, at assembly-line prices, you can get dump trailers custom-designed for your specific job. They will bridge legal in any state, give you maximum payload, and deliver the goods at a pre-determined cost-per-yard, -per-yard-mile or -per-ton-mile.

How? Just give the man from Hobbs your job specifications. Give him factual cost information. He'll make a weight distribution and cost analysis that will pin down the Hobbs Schonrock Cable Dump best suited to do your work and earn a maximum profit. You'll know in advance where you stand!

On the job, your Hobbs Schonrock treats you, your trucks and your drivers right. It's built rugged, allows flex in the center beam to handle top shock loads. Follows your truck naturally. Dumps rapidly with a minimum strain on the truck, trailer and cable, thanks to its exclusive booster fifth wheel. Dumps from any angle on any terrain. Maintenance and repair are a fraction of the cost involved with other type dump trailers. It's no wonder Hobbs Schonrock Cable Dumps are the backbone of so many successful road-building and construction hauling operations today.

Let the man from Hobbs analyze your hauling operation. It will pay you well to write today for details.



**SCHONROCK
CABLE DUMPS**



THE MAN FROM HOBBS

- KNOWS TRAILERS
- KNOWS YOUR NEEDS
- SERVES YOU WELL
- IS NEAR YOU

SEE HIM FOR ALL YOUR HAULING JOBS!

HOBBS TRAILERS

609 NORTH MAIN FORT WORTH, TEXAS

SALES AND SERVICE THROUGHOUT THE WESTERN HEMISPHERE

For more facts, use Request Card at page 18 and circle No. 214



A 6-foot section for one of the twin cooling-water discharge lines of the Bergen generating station in New Jersey stands ready to be pulled into the steel-lined tunnel under the railroad right-of-way. The cable, foreground, extends to a wagon pulled by a 5-cable rig powered by an air tugger. The small air tugger between the two men pays out cable and retrieves both cable and wagon after the pipe section is in place.

Unusual methods the rule on discharge-pipeline job

Installation of 543 feet of 9-foot-ID reinforced-concrete pipe for twin lines of cooling-water discharge pipe under 13 railroad tracks had all the aspects of a major tunneling job. This project, for the Bergen generating station of the Public Service Electric & Gas Co. of New Jersey, had to be done without interrupting traffic on the New York Central and the New York, Susquehanna & Western tracks. The jacking method of installation, which would be usual in a case like this, could not be used because of a

heavy inflow of subterranean water and the consequent danger of cave-ins.

Public Service engaged J. Rich Steers, Inc., New York City, to drive the two tunnels under the supervision of the general contractor, United Engineers & Contractors Inc., Philadelphia. Steers sublet the labor of driving the tunnels to Thomas Adams Contracting Corp., Flushing, N. Y.

As the tunnels were cut under the roadbed, they were lined with heavy ¼-inch steel plate, stiffened every 16 inches with reinforcing ribs. Voids between the tunnel and the liner were grouted to guard against any shift of earth under the roadbed.

When the lining job was completed, crews started placing the big pipe sections. The pipe, with walls 8 inches thick to provide strength for both earth load and vibration caused by passing trains, was reinforced with two cages of steel welded-wire fabric, style 2 x 8-0.505/4, the heaviest reinforcement ever used in 108-inch-diameter pipe.

The pipe placing operation was speeded by a novel method of getting the pipe into the tunnel. Narrow-gauge railroad tracks, 2 feet apart, were laid the entire length of the tunnel, resting on the bottom arc of the 13-foot-diameter tunnel liner.

Section by section, the pipe lengths were lowered into the cofferdam at the east end of the twin shafts and nested between the narrow-gauge tracks. Each section was then pulled into the tunnel to its final position, to be mated with the preceding section in a tight shiplap joint.

Motive power for the operation came from an Ingersoll-Rand air tugger, which exerted a pull through a 5-cable pulley arrangement to a wagon that rode low on the tracks ahead of the pipe. The wagon, in turn, used one cable to tow the pipe.

As the big air tugger at the west end of the tunnel pulled the wagon, a smaller tugger at the east end had to pay out take-up line. Compressed air for the tuggers came from a Worthington Model 600 and a Cat Model D1300 compressor.

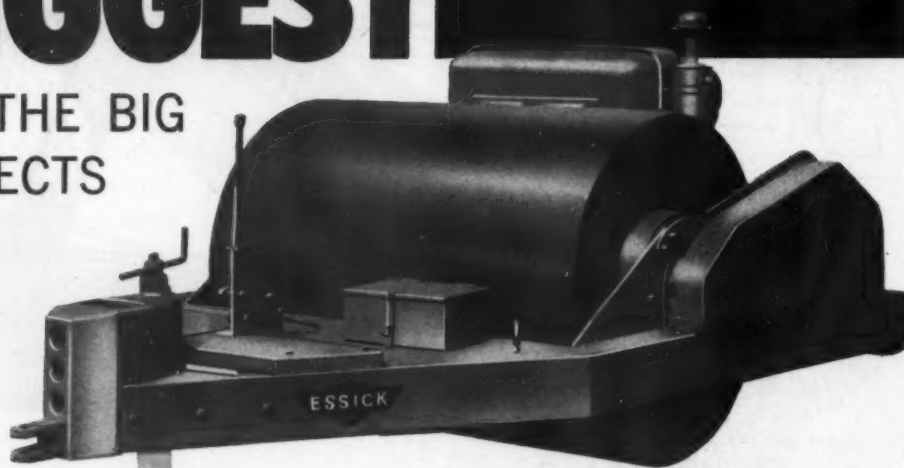
The tugging cable was hooked onto the pipe by a bridle arrangement, which gripped the pipe section by the lip at the trailing end of the pipe invert. The tugging cable was fastened to this bridle, and was kept from pulling the bridle up and possibly breaking the lip of a pipe section by a screw jack and steel-pipe device between the top of the concrete pipe and the bridle.

On an average, the crew placed a 6-foot pipe section per hour. After all joints were cement-mortared, the void between the pipe and the liner was filled with concrete. This was done by blowing well graded pea gravel, up to ¾ inch in size, through the lifting hole in each section then pumping grout into place. THE EN

NOW THE BIGGEST

FOR THE BIG PROJECTS

ESSICK
VIBRATING ROLLERS



72" WIDE 580 TONS

Big, Husky, Powerful

With the tremendous compaction of 580 tons of kinetic energy developed each second, the Essick 72" vibrating compactor has proven it can cut more than 50% from spreading and rolling time required by any other methods now used for compacting earth fills.

High frequency vibrations, (in contrast to low frequency vibration of other makes), together with the 580 tons of kinetic energy per second move an extra large pool of earth particles, keying them together into a dense mass ... meeting the most rigid compaction requirements in record time.

The Essick Model VR-72-T has successfully compacted lifts up to 7 feet of granular material and lifts from 2 to 5 feet of heavy soils having a clay content of more than 45%.

The VR-72-T produces maximum compaction through high frequency vibrations utilizing a scientifically engineered power transmission system. Where other equipment has failed, Essick vibrating rollers provide continuous production year after year.

The Model VR-72-T is designed for the contractor whose present equipment cannot achieve required densities...whose compaction costs are too high...whose equipment investment, operation, maintenance, haulage, and storage costs are excessive—anywhere in the compaction field where present equipment and methods are costing precious dollars, the Essick Model VR-72-T vibrating roller will do the job better at a greater profit.

PROVED IN ACTION

LOS ANGELES DEPARTMENT OF WATER AND POWER, SCATTERGOOD STEAM GENERATING PLANT, EL SEGUNDO, CALIFORNIA
Compacting Beach Sand For Fuel Tank Foundations

SAN DIEGO STEAM GENERATING PLANT, SAN DIEGO, CALIFORNIA
Compacting Foundation Fill For Complete Project

JAMES AND ALDRICH CONSTRUCTION COMPANY, AMARILLO AIR FORCE BASE, AMARILLO, TEXAS
Compacting Clay Soil For Jet Runways

WALTER RADKOVICH COMPANY, CONTRACTORS, SANTA MONICA STORM DRAIN PROJECT, SANTA MONICA, CALIFORNIA
Re-fill And Compacting Over Concrete Drain Pipe System

RADCO CONSTRUCTION INCORPORATED, ALTADENA STORM DRAIN PROJECT, ALTADENA, CALIFORNIA
Re-fill And Compacting Over Concrete Drain Pipe System

OTHER VIBRATING ROLLERS 13", 26", 32" AND 54" WIDE. ALSO A COMPLETE LINE OF STATIC WEIGHT ROLLERS.

(Many Engineers are writing new specifications calling for more stringent compaction requirements. ESSICK Vibrating Rollers are consistently exceeding these requirements with fewer passes and higher lifts.)

ESSICK MANUFACTURING CO.
1950 SANTA FE AVE., LOS ANGELES 21, CALIF.
850 WOODRUFF LANE, ELIZABETH, NEW JERSEY
affiliated with the T. L. SMITH COMPANY, Milwaukee, Wisc.

For more facts, use Request Card at page 18 and circle No. 238

Surveying Washington



by E. E. HALMOS, JR.

Federal expenditures for direct construction

For the immediate future, the President's budget on federal expenditure for direct construction provides money for a variety of work:

- Housing and community development—\$112 million for dormitories at public institutions; loans to finance construction of 35,000 low-rent housing units.
- Panama Canal—\$7 million for employee quarters, renovation, and modernization.
- Veterans' service—new hospitals at Cleveland, Ohio, and Jackson, Miss.; plans for a 400-bed hospital at Oteen, N. C.
- Education and research—about \$50 million for assistance in school construction in areas affected by federal activities.
- Agriculture—no new funds, but money available from previous appropriations for 100 projects for watershed conservation.
- Major national security construction—a total of \$2 billion. This will include \$1.7 billion of military construction—much of it for bases and support facilities for missiles—plus an added amount for atomic-energy work, detection systems, and the like.
- Cooperative and nonprofit groups—\$498 million. This covers rural electrification work; certain schools, such as Howard University in Washington; and hospital facilities. Some \$93.4 million is for college housing.

In all, including these amounts and other civil and public-works construction, the budget for 1960 fiscal-year public works totals \$4.2 billion.

Index of average bid prices shows highway costs stable

Highway construction costs may be stabilizing. At least that's an inference drawn from BPR's index of average bid prices for the federal-aid highway construction.

For the fourth quarter of 1958, the index went up 1.7 per cent. But over the past year, fluctuations up and down have been so small as to mean almost no actual change for the full year. Thus, the index dropped 2 per cent (under 1957) in the first quarter of 1958; rose 0.8 per cent in the second quarter; and dropped 1.7 per cent in the third quarter.

The year 1946 is taken as a base for the index. The low point was 125.5

in the second quarter of 1955; the high point was 143.4 in the fourth quarter of 1957. The present reading, at the end of 1958, was 141.6. Included in its components are excavation; surfacing; and structures, including reinforcing steel, structural steel, and structural concrete.

One reason for the apparent stability is obvious—more bids on highway construction jobs. For instance, on the interstate network, the average number of bids per contract was 7.5 in the first half of 1958. The average low bid was 10.1 per cent below engineering estimates.

BPR highway programs right on schedule

The Bureau of Public Roads feels that the various highway programs under its jurisdiction are moving on schedule. In a year-end summary, BPR adds it up this way:

- Interstate System—construction under way on 3,571 miles, at an estimated cost of \$2.33 billion. In addition, \$1.83 billion has been authorized or spent for preliminary engineering and acquisition of right-of-ways since the program started in July, 1956. Completed contracts on the system, as of December 31, come to \$944 million, including those for 2,087 bridges.

- ABC program (federal-aid primary and secondary systems)—contracts completed since July, 1956, for

80,112 miles of road and 10,217 bridges at a total cost of \$3.56 billion. As 1959 started, work was under way on 16,754 miles of road, including 4,002 bridges, at an estimated cost of \$2.06 billion.

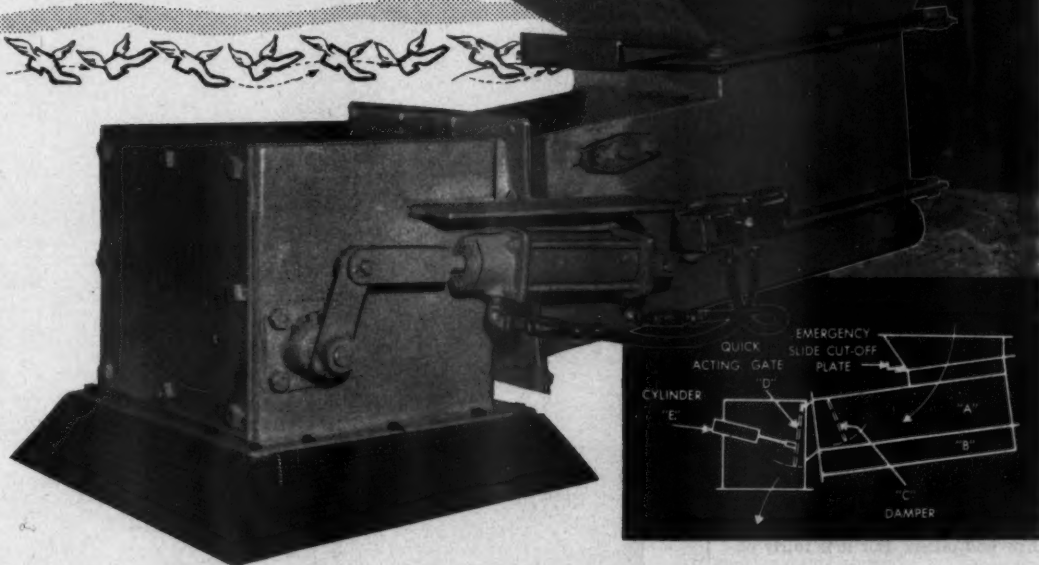
- "D" funds (special program authorized in 1958 to stimulate employment)—the full \$400 million of federal aid available awarded to contract, and construction completed on 797 miles and 53 bridges. Construction now under way on 8,394 miles and 1,178 bridges, estimated to cost \$489 million.

Tax, record problems? Check this new book

Contractors with tax and record problems can profitably invest \$10 in a new book that tells them the vary-

FEEDING CEMENT?...

let your cement walk on air!



The BUTLER Airflomatic Cement Feeder

With the BUTLER AIRFLOMATIC your cement is conveyed on a trouble-free cushion of air. No moving parts to break. Nothing to cause down-time because of feeder trouble.

And you have high precision feeding—always.

Best of all, the BUTLER AIRFLOMATIC can easily be installed in any plant regardless of make wherever a vane feeder or screw feeder has been used.

A blower attached to the batcher platform provides a cushion of large volume, low pressure air

which also aerates and fluffs the cement in the overhead bin... and does it much more effectively than a costly compressor. Often no jets for additional air are needed.

So no matter who manufactured the plant you have, call in the BUTLER Distributor* for a complete description of the Airflomatic Feeder or send the coupon directly to BUTLER BIN. You'll get prompt action.

BUTLER BIN COMPANY
971 Blackstone Avenue, Waukesha, Wisconsin

*One BUTLER Distributor put an Airflomatic in his pick-up truck, called it 20 Concrete Plants and Roadbuilders set-ups. All 20 bought Airflomatics. You'll want it, too.

BUTLER BIN COMPANY, Waukesha, Wisconsin

Please send me complete description and costs of the BUTLER AIRFLOMATIC CEMENT FEEDER

- ☐ We have a Ready-Mixed Plant which was manufactured by.....
- ☐ Highway Batching Plant which was manufactured by.....
- ☐ Concrete Batch Plant which was manufactured by.....

NAME

COMPANY

STREET

CITY

STATE

For more facts, use coupon or Request Card at page 18 and circle No. 239

(Continued from preceding page)

ing lengths of time that company records must be kept in regard to income and excise taxes, social security, payrolls, and the like.

The book—Vol. 1 of a series subtitled "A Guide to U. S. Federal Requirements"—is put out by the Controllership Foundation, Inc., 2 Park Ave., New York 16, N. Y. Its 242 pages list general requirements of the Internal Revenue Service, Labor Department, Security and Exchange Commission, plus those of other departments and agencies concerned with government contracts.

Watch these bills on equipment buying, taxes

Contractors will do well to watch the progress of a bill (S. 838) slipped into the Senate hopper by Sen. O'Mahoney (D., Wyo.). It's aimed at the automobile business and would prohibit financing of automobile sales by manufacturers. But provisions apparently would also apply to purchases of earthmoving equipment.

An unannounced bill now in the House mill could mean a lot to contractors. HR 10 would allow self-employed persons to deduct from their income taxes amounts paid by them into retirement funds for their own use.

Congressional battle important to contractors

A most interesting and significant battle now going on in Washington is a political one, but its implications are of vast importance to construction, as well as to all other industries.

The battle centers on spending, but some of the real objectives of the fight lie ahead—in the 1960 elections. The Republicans are credited by most observers with having played it smart in throwing down the "spending" challenge. The fact that the President has presented a balanced budget will make it very hard for the Democratic leadership to justify measures that throw the budget out of balance.

They're trying hard to justify them—this is behind a lot of the sharp questioning of Defense Secretary McElroy and others. But it is fairly obvious that taxpayers throughout the nation are generally inclined to follow the President; the rate of taxes now and the increases in state levies are beginning to scare a lot of people.

Congress knows it. You can see that knowledge reflected in the maneuverings on the big housing bill the Senate finally okayed early in February. Although the completed measure (which must pass through the House, then through conference committee, and back to both houses before it is law) that the Senate passed along calls for a \$2.7 billion expenditure over a period of six years—\$1 billion over the President's announced program—it is carefully worded so that it will add only about \$100 million to the 1960 fiscal-year budget. Democrats figure that Ike will sign such a measure, rather than get no bill at all, but that he wouldn't hesitate to veto anything that would really throw his precarious "balance" out of kilter. And Demo-

crats figure that after 1960, possibly with their own man in the White House, they will be able to take care of the excess spending that's provided in the measure.

The same thing applies to the \$565 million airports-aid measure. As the Senate began consideration of the bill, there was brave talk that no compromise would be considered in granting this aid for omnibus airport improvements, including much for what airmen call "outside the gate": passenger and baggage-handling facilities, parking fields, landscaping. But the Administration has already warned that it wants any new airport appropriations aimed at safety: runways, lighting, safety devices, and aircraft servicing facilities.

The best bet seems to be a com-

promise again—something that will provide immediate help for safety work at not too great an increase over present levels, and that will put off until 1960 the problem of paying for increases.

Labor reform bill makes concessions to construction

There's no question that Congress will put through some sort of labor reform bill. The only question is how severe it may be. Betting right now is on the new Kennedy bill, which is the mildest of measures now before Congress.

The bill makes some special concessions to the construction industry: specifically, it would legalize union-management contracts made in advance of hiring of workers, long a rec-

ognized construction practice. Other provisions would force disclosures of union fund handling, secret elections.

The Administration's bill would give a little tougher, but it doesn't differ to any great degree.

Both measures are being criticized by labor and by industry, with labor arguing categorically against regulation and industry for more regulation. But the real argument is over the degree of control; most responsible labor leaders agree privately that some form of regulation is inevitable.

Civil-engineering enrollment level despite over-all drop

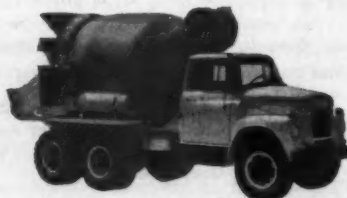
Although the latest report of the Department of Health, Education and Welfare spotlights a report that first-year college enrollment in all engi-

There's an International



Light loads or heavy loads, this INTERNATIONAL model RF-190 six-wheeler has the versatility to take 'em and keep operating costs down doing it. There are optional front axles to 15,000 lbs., 13 different rear axle ratios with up to

34,000 lbs. of capacity—and a range of high-displacement six-cylinder engines up to 501 cu. in. A standard differential lock-out, heavy-duty suspension and optional power steering make this truck the "work horse" of any fleet!



Save hundreds of dollars on first cost! Compact design INTERNATIONAL Truck slices bumper-to-back-of-cab dimension to 96 inches for maximum maneuverability... slices operating costs, too, with an economical 6-cylinder engine and matched driveline that makes a perfectly balanced unit for the job. Select-O-Matic transmission options provide smooth application of power no matter what the conditions—eliminate shock-load to rear axle. Full depth channel-type frame and husky components back up GVW rating at 33,000 lbs.



Tough...there's no other word for it! This INTERNATIONAL Truck model RF-230 is built for keeps to keep deliveries on the move. With its deep-flange, channel-lined, full depth frame and standard 15,000 lb. front and 50,000 lb. bogie, it "walks" 10-yard-plus loads over pock-marked terrain or hustles down the highway with no strain. What's more, you can get a 501 cu. in. displacement engine (444 pound-feet of engine torque) working through up to 190-to-1 overall gear reduction... the muscled power that "gets in, discharges and gets out" in a hurry!

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engineering fields dropped by 11 per cent last fall (after a 7-year rise), there doesn't seem to be a major worry for construction, at least for a while yet. Civil engineering seems to be holding up.

HEW's report showed that 5,121 first engineering degrees were conferred in civil engineering in 1958, plus 13 to women graduates. The present seniors in the 170 accredited civil-engineering schools total 6,461. Behind them come 6,509 juniors; 4,473 sophomores; 6,655 freshmen.

In addition, there were 2,996 students enrolled for masters' degrees and 418 students enrolled for doctorates.

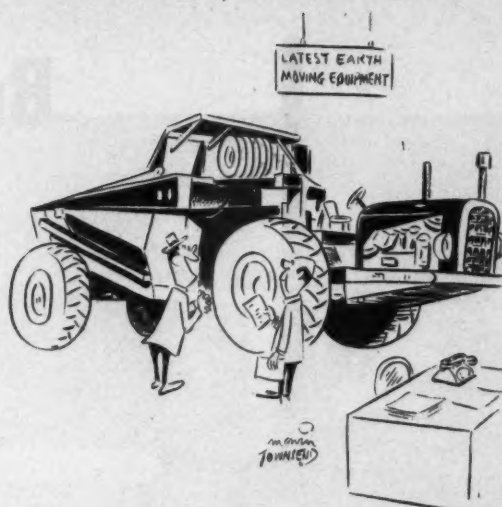
What worries HEW is that succeeding classes aren't showing increases over the present senior group. Such

increases are considered necessary, both because of the heavy attrition between freshmen and senior years in civil engineering and the increasing demand for engineers. By comparison, the freshman class in 127 chemical-engineering schools is 5,459, compared to 3,648 in the present senior class.

The federal agency figures the decline was caused by reports of declining job opportunities in engineering this past summer. Remedy: better counseling, less temporary panic.

The largest percentage of distress calls on the Pennsylvania Turnpike in a recent month was made by drivers out of gas. Their number was 841 out of 4,500. Another 400 didn't call; they got the gas themselves.

"I don't care what horsepower engine it has, or how many yards of dirt it will move. Just so long as it's red!"



transit-mix chassis for every job!



When you buy an INTERNATIONAL Truck you're buying from the world's most complete truck line.

What can this mean to you? For one thing, savings . . . a model *custom-tailored* to handle any size mixer unit you need in your operation at no premium cost!

And savings don't end there. Standardiza-

tion on INTERNATIONAL Trucks assures a dependable pattern of performance, the availability of standard parts and fast, expert service — everything you need to keep your business moving at full efficiency.

See your INTERNATIONAL Dealer for the facts and the figures. See if you don't agree . . . INTERNATIONAL is the truck that's "got it!"

International Harvester Company, Chicago • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

INTERNATIONAL[®] TRUCKS

cost least to own!

For more facts, use Request Card at page 18 and circle No. 240

MARCH, 1959

Fluid statics treated in revised edition

The second edition of "Mechanics, Part I: Statics," by J. L. Meriam, introduces the topic from a three-dimensional aspect to clarify the subject. Chapters discuss force systems; equilibrium; structures; distributed forces; friction; and virtual work.

Four appendixes cover review problems; moments of inertia of areas and mass; vector methods; and useful tables. A list of problems concludes each chapter. Diagrams and formulas abound in the book.

Available from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., the book is priced at \$5.

HRB bulletin reports on asphalt characteristics

The Highway Research Board has issued a 74-page booklet, "Rheological and Adhesion Characteristics of Asphalt," Bulletin 192. Its contents include: the use of rheological and other data in asphalt engineering problems; rheology of asphalts and its relation to behavior of paving mixtures; progress with adhesion-improving bitumen additives; asphalt composition and properties; and surface energy and adhesion properties in asphalt-aggregate systems. Charts and diagrams abound.

Priced at \$1.60, the bulletin may be purchased from HRB, 2101 Constitution Ave., Washington 25, D. C.

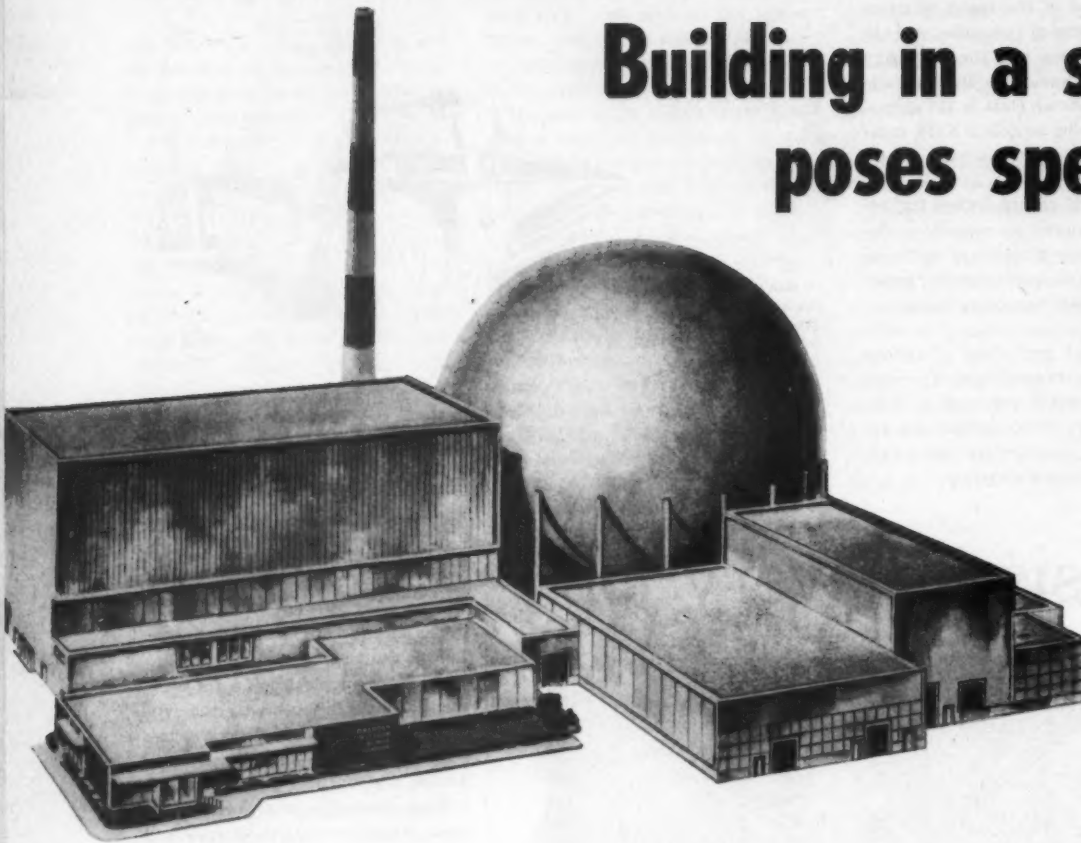
Dravo Corp. transfer

Clyde H. Slease, assistant to the president and counsel for Dravo Corp., Pittsburgh, has been transferred to Washington, D. C. At his new location, Slease will coordinate sales activities and handle liaison with governmental agencies for Dravo's divisions and subsidiaries.

Vermilya-Brown personnel

John J. Herbert has been made assistant treasurer of Vermilya-Brown Co., Inc., New York City. Herbert has served the building firm in various positions since 1922 and, prior to his present appointment, was controller and office manager.

Building in a steel ball poses special problems

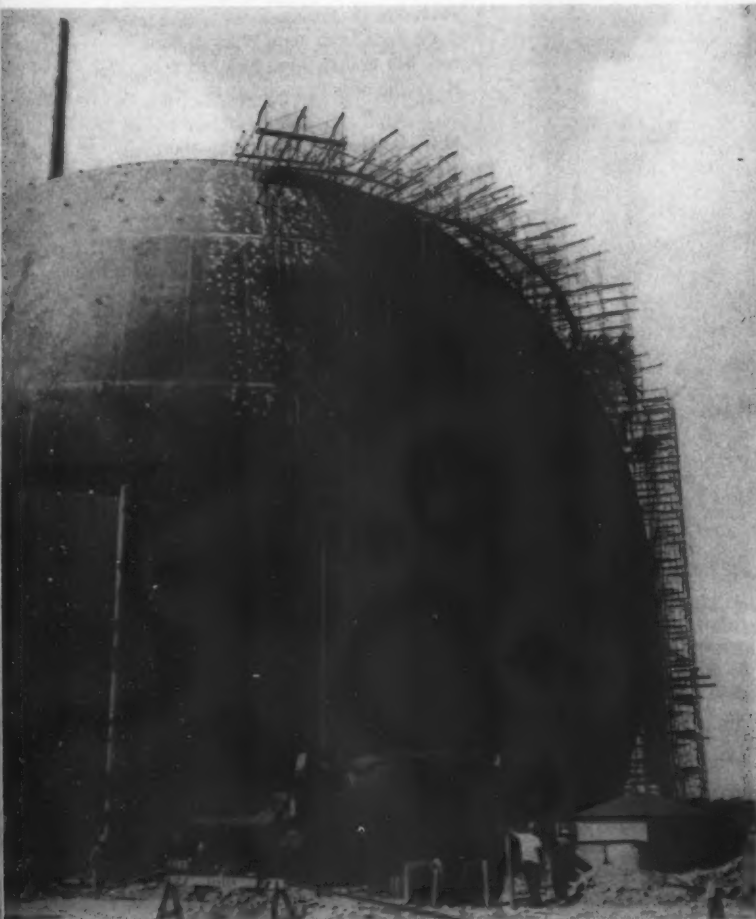


**Nuclear power station project
calls for new techniques
to build a concrete structure
in a 190-foot-diameter sphere**

by **BILL ALLEN**
field editor

Seldom has a contractor been faced with the construction problems found in building one of this country's first nuclear power plants.

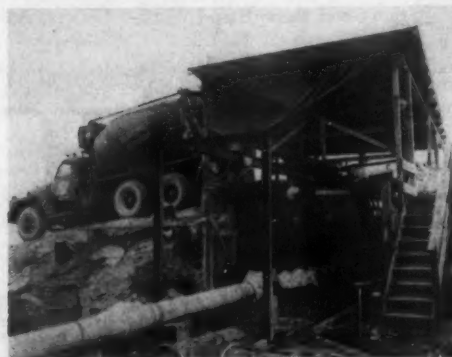
Perhaps the biggest challenge in the construction of the Dresden Nuclear Power Station in Illinois was the placing of some 27,000 cubic yards of concrete inside a 190-foot-diameter steel ball. All material and equipment to build the 171-foot-high internal concrete structure had to pass through two small holes in the side of the sphere.



The 190-foot-diameter steel sphere that will house the atomic-fired boiler for the nuclear power station gives little indication of the complex job inside. Men on the Safway scaffolding are spraying a 3/8-inch layer of cork-impregnated Insul-Mastic to the painted surface, while a Rex 7 1/2-yard mixer on a Mack truck chutes concrete to a trench to hold pipe and conduit in place.



Inside the sphere, three 8 1/4-inch-ID lines are used to pour the concrete bottom. A 2-ton traveling hook rides the cableway to transport material. The 24-foot access hole was cut out after the sphere had been tested to a 37-psi pressure.



High lifts for the concrete structure that houses the atomic furnace inside the steel sphere are made with only one line of the Rex Model 200 double Pumpcrete machine. In case of a break in the steam line, the steel sphere will prevent contamination of outside air.



Nearing the top of the concrete structure, steelworkers rig up gin poles, held by a crane, to lift forms where the 130-foot boom of the Manitowoc 3900 cannot reach. The crane was brought through a second access hole.



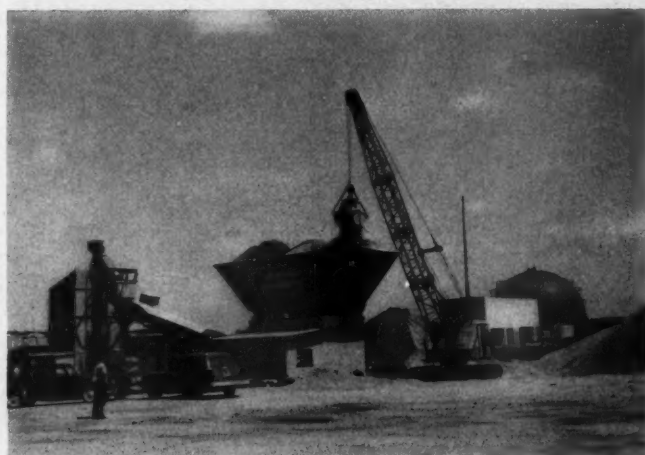
Since the portion of wall supported by the scaffolding had to be poured at a slow rate, the Pumpcrete line feeds into a twin collection-hopper that delivers concrete to hand buggies. At this point, crew are working 120 feet above the floor. Forms could not be braced from the walls nor pulleys hung from the roof.

It was like building a model ship inside a bottle. The feat was made even more difficult because the walls of the welded sphere could not be subjected to undue stress. This meant that forms could not be braced against the steel shell. It meant that pulleys could not be hung from the roof of the sphere.

Careful planning was necessary to organize the moves of men and equipment in the sphere. For example, a complete set of plans was made to determine the maximum size of crane and boom that could be maneuvered through one of the access holes. Each step of the operation had to be planned in advance to keep crews from getting "boxed in" with concrete.

In addition to careful planning, the right kind of equipment contributed to solving the construction problems. To place the concrete in the confined working area, the contractor

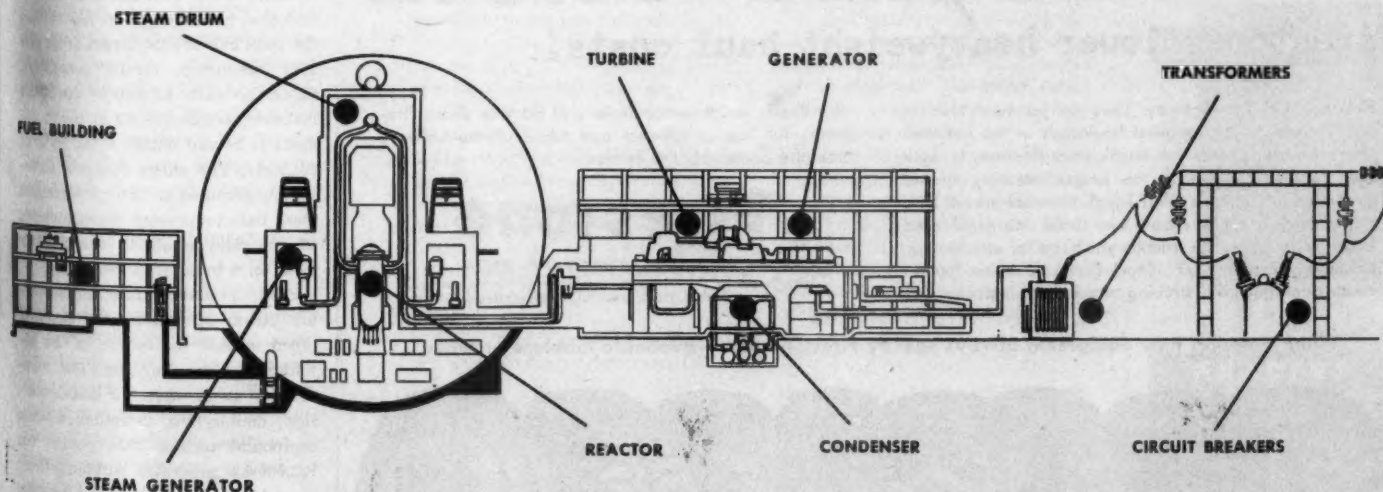
(Continued on next page)



The 57,000 yards of concrete needed for the job was turned out by this Rex-Burmeister plant at 100 yards an hour. Proportioned material goes by Barber-Greene 32-inch conveyor belt to the transit-mix trucks. Cement is batched out from the Burmeister 325-barrel plant at left.



A Mack-mounted Rex mixer picks up cement and water from the plant at right and aggregate and sand from the conveyor at left before passing on to the fly-ash batching setup.





Just outside the access hole, a Pumpcrete Model 200 double machine, left, and a single machine are being made ready to pump concrete into place for the structure that will house the atomic furnace. The double machine pumped up to 80 yards per hour with two lines. The single machine hit a maximum of 35 yards per hour.

(Continued from preceding page)

put to good use two Rex Pumpcrete machines.

Special cantilever forms were designed and built by the contractor to form the 171-foot-high walls of the structure within the sphere. Built of wood backed with steel channels, the forms contained numerous working platforms that allowed men to adjust the panels as well as work the concrete. The forms held a 10-foot lift.

Operative by mid-1960

Commonwealth Edison's nuclear power station is being built under a \$45 million contract by General Electric Co., which expects to have the plant ready for operation by mid-1960.

Under the supervision of G-E, the actual construction work is being handled by Bechtel Corp., San Francisco. Bechtel is working under a cost-plus-fixed-fee type of contract.

Built without the help of federal funds, the power plant will be owned and operated by Commonwealth Edison Co., which is paying \$30 million of the contract price, plus site and overhead costs. The Nuclear Power Group is contributing the \$15 million balance of the \$45 million as a research and development expense over a 5-year period. Member companies of Nuclear Power are: American Electric Power Service Corp., Bechtel Corp., Commonwealth Edison Co., Central Illinois Light Co., Illinois Power Co., Kansas City Power & Light Co., Pacific Gas & Electric Co., and Union Electric Co.

Ball and box

For a home for their active atoms, Commonwealth Edison chose a nice peaceful place in the country. The plant is about 50 miles southwest of Chicago at the confluence of the Des Plaines and Kankakee rivers. It's not far off U.S. 66.

Basically, the plant consists of a steel ball, housing the atomic-fired boiler, and a box-shaped building, housing the steam-powered turbines and generator.

Shielded by thick walls of concrete within the steel ball is the atomic furnace or reactor. The 350-ton steel pressure vessel contains the uranium fuel that boils the water. Also within the steel ball are the steam drum and four secondary steam generators. Since the water as well as the steam becomes radioactive, all of the equipment is housed within thick walls of concrete. The entire concrete structure is enclosed in the pressure-tight steel ball to prevent contamination of the outside air in the unlikely event of a break in a steam line.

From the steam drum and secondary steam generators, the steam is piped outside the sphere to the adjoining turbine building. The high-velocity steam drives a dual-admission, double-flow, 3-section, tandem compound turbine that powers the 192,000-kw generator. Although there is additional protective concrete around the turbine and the condenser, the layout of the turbine



A giant Euclid in action—with a 120-ton haul capacity, the world's largest dump truck.

JOB RECORDS PROVE

Firestones lower heavyweight haul costs!

Firestone Off-The-Highway Tires deliver new lows in hourly costs on the roughest haulroads in the business! That's because every job-engineered Firestone is built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires! Tough Firestone treads and sidewalls defy cuts in rubble and shale. Job-engineered tread designs give the traction you need for any footing. Exclusive Firestone S/F (Shock-Fortified) nylon bodies resist damage from bruising shock and impacts. Call

your Firestone Dealer or Store and ask him about Firestone's full line of tubeless and tubed off-the-highway tires and on-the-job tire service.

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Firestone

BETTER RUBBER FROM START TO FINISH

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When ordering new equipment always specify Firestone tires—available tubeless or tubed



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Excavator

Super Rock Grip
Wide Base®

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Earthmover

Ground Grip®
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For more facts, use Request Card at page 18 and circle No. 215

Pumpcrete

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building is similar to that of con-
ventional plants.

In addition to the ball and the box,
there is a fuel-handling building
where new and spent atomic fuel is
stored. By remote manual and me-
chanical handling, the new fuel is
carried through underwater channels
to the reactor. Water serves as a
cooling and shielding medium for the
spent fuel being returned to the fuel
building.

The atomic furnace won't have to
be stoked very often. The 60-ton core
will have to be refueled at a rate
equivalent to about a full replace-
ment every three years. In between
times a small percentage of the fuel
will be shifted and new fuel added, as
computer studies may indicate. Dur-
ing this period, a conventional plant
of this size would burn about 1,800,000
tons of coal.

Building the ball

A considerable amount of rock ex-
cavation had to precede construction,
since the ball at its lowest point is
about 39 feet below ground level. A
2.5-foot gap, later to be filled with
concrete, was left between the rock
and the lower portion of the steel
shell.

Putting up the 3,500 tons of steel
in the sphere was a construction feat
in itself. Chicago Bridge & Iron Co.,
Chicago, which handled the work,
erected the plate assemblies with a
central derrick mounted on a 210-
foot-high tower. C B & I started with
the equator band, which was sup-
ported by 20 columns, then welded the
plates course by course down to the
bottom and course by course up to
the top. The thickness of the steel
plates varied from 1.25 to 1.4 inches.

After the steelwork was com-
pleted and the sphere was completely
sealed, it was tested with air to a
pressure of 37 psi. This is 25 per cent
above the design pressure of 29½ psi.

Concreting up to ground level

After the sphere was tested, a 24-
foot-diameter access hole was cut in
its side at ground level. Later, when
heavy equipment had to be brought
into the sphere, another access hole
was cut. This oval-shaped hole was
approximately 22x29 feet.

Built into the bottom 39 feet of
the steel ball is a complex of thick-
walled chambers and equipment
rooms. These chambers are topped
at ground level by a heavy floor slab.
Rising from the slab is the 171-foot
concrete tower that houses the re-
actor and steam-generating equip-
ment.

Before the lower chambers in the
ball could be built, the 2.5-foot gap,
separating the steel shell from the
rock, had to be filled with concrete.
To avoid "floating" the ball, outside
concrete went up at about the same
rate as inside concrete. With no
greater than 3-foot height differential
allowed, the supporting pours on the
outside were balanced against the
pours on the inside.

The first and second lifts, filling
the gap at the bottom of the sphere,

required forming. The remaining five
lifts up to ground level were suf-
ficiently flat to require no forms.
Working in the 2.5-foot gap was dif-
ficult for the men, but the lines from
the two Pumpcrete machines had no
trouble getting the concrete to where
it was needed.

It was not necessary to use non-
shrinking grout to make a tight
bearing surface between the outside
of the steel shell and the concrete.
Slight voids in one lift were filled by
the liquid concrete of the next lift.

Concreting the inside of the sphere

at lower levels also had its problems.
Since the only access was through
the 24-foot-diameter hole, getting
equipment and materials to the work
area was difficult. The problem was
solved by using a cableway running
from outside the hole to a point about
halfway up on the inside of the shell.
(This was the only time that the
contractor was permitted to tie to
the shell.) Powered by a 3-drum
hoist outside the sphere, a 2-ton
traveling hook picked up reinforcing
steel and delivered it to the men
working in the lower levels.

Concrete was placed by as many as
three 8¼-inch-ID lines stemming
from two Pumpcrete machines lo-
cated outside the sphere. Two lines,
from the Model 300 double, pumped
up to 80 yards per hour into the
structure. One line, from the Model
100 single, pushed through a maxi-
mum of 35 yards per hour.

Going up with the tower

After the lower chambers were
capped with a ground-level floor
slab, work on two of the walls of the
171-foot-high tower commenced. The

NEW 'GATOR TWISTOOTH BLADES

really R-R-R-I-P-S up the dirt!

BUCKETS

DOZERS

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The first major advance in blade design ...in years

The Shunk 'Gator Twistooth Blade has teeth that enter the material at varying angles . . . actually chewing up the dirt . . . minimizing blade contact as the teeth dig in . . . reducing over-all impact and wear on machines.

On scrapers, 'Gator Twistooth Blades start cutting the second teeth make contact. There's no "riding over" or "chatter." Power and travel distances are cut—up to 50% in some cases! Material is pulverized . . . eliminating costly pan voids . . . for greater payloads.

On a 'dozer, the teeth bite their way through the toughest material . . .

literally chewing up roots and stumps.

In grading, the teeth penetrate the hardest surfaces. Humps and bumps are cut off. Loose material is moved into chuck holes. The worst rutted roads are quickly transformed into the smoothest surfaces.

Write today or call your nearest Shunk Dealer . . . for complete details on the most profitable blade ever built. Try the 'Gator Twistooth Blade at the earliest opportunity . . . see for yourself how it outperforms any blade you've ever used . . . and brings in bigger profits on every job!

BEST BLADES MADE

Shunk

Having blade problems? Bring them to Shunk. Shunk engineers are always available to help on special or unusual applications.

SHUNK MANUFACTURING COMPANY, BUCYRUS, OHIO

For more facts, circle No. 216-



Harold Sweet, Pumpcrete super, checks the connections in the 8 1/4-inch-ID line leading from the Model 200.

(Continued from preceding page)

greater part of the two remaining walls was left open to receive the 300-ton, 42-foot-high reactor vessel.

Since the block-shaped tower was left open on two sides, it was possible to work a Manitowoc 3900 crane inside the 48x56-foot base. With its 130-foot boom, the crane was able to place the forms and handle the material for nearly the entire height of the tower. Forms for the top of the tower were lifted by gin poles secured to the concrete.

The thickness of the walls of the tower ranged from 4.5 feet at the base to 3 feet at the top. The open sides of the tower were bridged with concrete at the top to complete the four walls for the upper section. The bridge was supported by sturdy towers of Patent pipe scaffolding.

Special forms were designed by the contractor to meet the conditions imposed by working within the sphere. The cantilever panels were built of wood backed by strong steel wales and vertical stiffeners. The biggest panel was about 12x30 feet and weighed 4 tons.

To aid in setting the panels, as well as working the concrete, the outside forms held four working platforms at separate levels. Screw-type adjusters at the base of the vertical stiffeners permitted the forms to be adjusted for plumb. The forms were designed for 10-foot lifts.

Concrete was pushed to the top of the tower by a Pumpcrete Model 200 double. The gasoline-engine-powered machine used only one of its two lines to make the high lifts.

Ventilation

Normally, men working on a 171-foot-high structure have no trouble getting enough fresh air. Inside the ovenlike steel shell, however, it was another matter. To rid the sphere of exhaust gases, as well as to get fresh air to the men, a battery of about a dozen big fans was necessary. The most important fan was the 80,000-cfm blower mounted in a 3.5-foot-diameter hole at the top of the ball. The remaining fans were stationed on the working platforms of the

tower and at various points inside the sphere.

Batch plant

The 57,000 cubic yards of concrete for the entire job was batched out by an efficient Rex-Burmester plant. Located about a quarter mile from the sphere, the plant had no trouble putting out its rated capacity of 100 cubic yards per hour.

From the 3-compartment 100-ton aggregate bin, the batches were carried by a Barber-Greene inclined

conveyor to the transit-mix truck. At this stop, the trucks also picked up a batch of cement from the 325-barrel silo, and a metered quantity of water. At the second and last stop, the transit-mix truck picked up a batch of fly ash. The driver of the truck controlled this batching by pushing a button at the plant.

Working a push-button panel, one man controlled the operation of the entire plant. He loaded the trucks (except for the fly ash), made out the tickets, and supervised the plant. An-

other man, of course, was needed to operate the P&H 255A crane that stoked the aggregate bins. Newkirk Transit Mix, Inc., of Joliet, Ill., owned and operated the plant.

Personnel

Field supervision for General Electric is handled by Fred A. Hollenbach, resident manager. The general superintendent for Bechtel is Ray Owen. Commonwealth's representative for the job is Walter Shewski.

THE ENR



These Job "Supers" and Operators with comparison proof can tell you:

Planet-steered "24's" lick conditions too tough for clutch-steered crawlers



Ethan Smith, Superintendent for W. S. Fowler Construction Co., Oneonta, Alabama, reporting:

"My 20 years as operator, dirt foreman, superintendent tell me International TD-24 dozers are really something for pioneering especially in sidehill cuts through shot rock. Planet Power steering keeps the push blade in the sidehill without rear end page. And when we use the Torque-Converter TD-24 for pushing, it heaps the full fast by crowding the push block, even through shot rock." The job: Working on a 3-mile section of new U. S. Interstate 31, Blount County, Alabama—with 1,100,000 cu. yd. to move, including 350,000 cu. yd.

THE FIRST OF 20 PRESTRESSED composite-design bridges for the Erie Thruway project in Pennsylvania is the Lake Pleasant overpass. The 4-span bridge is 201 feet long and uses beams of 30, 38, and 65 feet. Erection is handled by a Bucyrus-Erie 30-B transit crane on an 8 x 4 carrier. The 34-foot-wide bridge will have a 4½-inch reinforced-concrete deck. The 46-mile-long Thruway runs across northwestern Pennsylvania, linking U. S. 20 in Ohio with the New York Thruway.



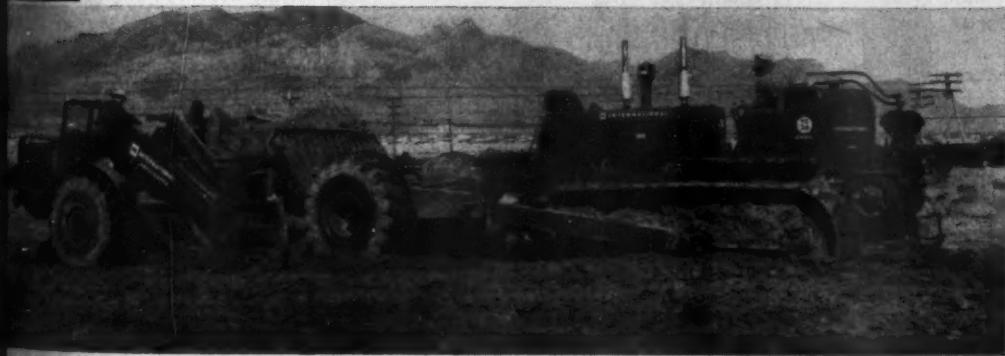
Don Doyle, TD-24 operator for Funderburk, Anderson & Stone, Sutherlin, Oregon, speaking:

"We are completing a tough rock road here where another machine (20-ton track-type machine of different make) tried and failed. The Torque-Converter and especially the TD-24 (planetary) steering system made this possible. We can side-cast and move out rocks other equipment can't possibly move." Contractor is building 17 miles of Forest Service access road into primitive mountain country—using two International TD-24 Torque-Converter crawlers for the pioneering and other dozer work.



States Edward A. Schultz, operator for John Schultz Contracting Co.,

Westbury, Long Island, New York: "The TD-24 Torque-Converter is easy to operate and also easy on equipment being push-loaded. It outworks any equal-sized tractor I have ever operated." Picture shows the Schultz TD-24 bulldozing large boulders from acreage being developed for a subdivision.



Superintendent Roy Allen, for George Grimmert, El Paso, Texas, says: "Our International equipment forms the backbone of our construction machinery fleet. The TD-24 Torque-Converter pusher is excellent, heaping on loads in 30 to 45 seconds whether the push is straight or curving. The 'live' track, power steering puts TD-24 performance in a class of its own." The contractor is providing 100,000 cu. yd. of fill dirt for a 490-home project in Fort Bliss, Texas.

See how your operators can give you new tough-job efficiency—can hand you paydirt dozing dividends of up to 50%—on Planet Power-steered International TD-24 crawlers. Prove what it means on benching, bank-cutting, or side-casting to command full-time "live" power on both tracks. Measure the advantages of Planet Power steering when dozing, pushing and pulling—eliminate "dead-track drag" on the turns—have instant, on-the-go Hi-Lo power-shifting! Call your International Construction Equipment Distributor for a demonstration!

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Construction Equipment

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

For more facts, use Request Card at page 18 and circle No. 217

Port, tunnel authorities to build Narrows Bridge

The Port of New York Authority and the Triborough Bridge and Tunnel Authority are planning final details for construction of the \$320-million Narrows Bridge at the entrance to New York Harbor. Joining Staten Island at Fort Wadsworth with Brooklyn at Fort Hamilton, the 2½-mile-long, 12-lane double-deck bridge will have a center suspension span of 4,260 feet. Completion is expected in mid-1964.

The bridge, first proposed by the two authorities in 1955, is part of a program of arterial highway construction designed to facilitate traffic in the New York-New Jersey metropolitan area.

Editor, publicist Paul M. Keister dies

A former sports editor of *The New York Post* and a public-relations consultant, Paul M. Keister, died last month. Keister entered public relations in 1944, joining Steve Hannagan & Associates. He later became a partner in Rider & Keister. In 1956 he headed his own firm with offices in New York City.

A member of the Overseas Press Club, Keister was also, for 10 years, a public-relations counsel to the Building Trades Employers Association of New York.

District sales manager named by Universal Mfg.

Faschal D. Brooks has been made Southern District sales manager for the Universal Mfg. Corp., Zellenople, Pa. He will be responsible for sales and distribution development in the southeastern states. The firm manufactures galvanized-steel-panel scaffolding for shoring and masonry work, building tower cranes, and building material-handling equipment.

Macwhythe appoints

William J. Anderson has been made a regional sales manager by the Macwhythe Wire Rope Co., Kenosha, Wis. He will supervise sales in the Midwest and Eastern sales territories from headquarters in Kenosha. Anderson was formerly a direct factory representative for the company.



Urban tunnel completed through efficient work on small sections of job

Several types of operations go on simultaneously along short stretches of the 2,380-foot-long tunnel forming part of Boston's John F. Fitzgerald Expressway. A Lorain truck crane, right, is placing concrete for the exterior wall. At lower left, the floor of the tunnel is under construction. Excavation is being done in the background.

The 2,380-foot-long tunnel forming part of the \$80 million John F. Fitzgerald Expressway in Boston was a \$13,403,000 job, but actual work resembled a number of small projects. Varied methods of construction were in use at the same time on short tunnel segments.

Steel erection, forming, installation of utility lines, replacing or rerouting of cross streets over completed tunnel sections, and erection of timber bridges on temporary steel stringers were some of the jobs involved in building the tunnel.

Tunnel foundation

One of the many efficient operations was the placing of the tunnel foundation, which consists of a 1-foot-thick gravel blanket topped with a 6-inch concrete mat and a 1-ply waterproofing membrane. This was covered with a layer of brick and mastic, which was topped with a 2-inch-thick protective cement finish. The tunnel floor beams, later encased in concrete, were placed on this protective finish. Concrete pads on the 2-inch finish supported the 36 WF floor beams and allowed the Class A invert concrete to completely encase the beams.

The mastic was heated to a liquid state by a diesel-fired boiler and transported around the job in wheelbarrows. It was then mopped over the brickwork. Bricks delivered to the site by flat-bed trucks were stacked on pallets; these were spotted around the work by a Yale & Towne fork-lift.

Concrete sewer line

Another job was the installation of a 72-inch-diameter reinforced-concrete sewer line adjacent to and outside of the tunnel wall. V. Barletta Co., Inc., of Roslindale, Mass., the contractor, used a Lorain crane equipped with a clamshell bucket to excavate the ditch for the sewer pipe between the tunnel excavation and exterior wall.

This work had to be completed before construction of the exterior wall, which would have made the area of the sewer line inaccessible.

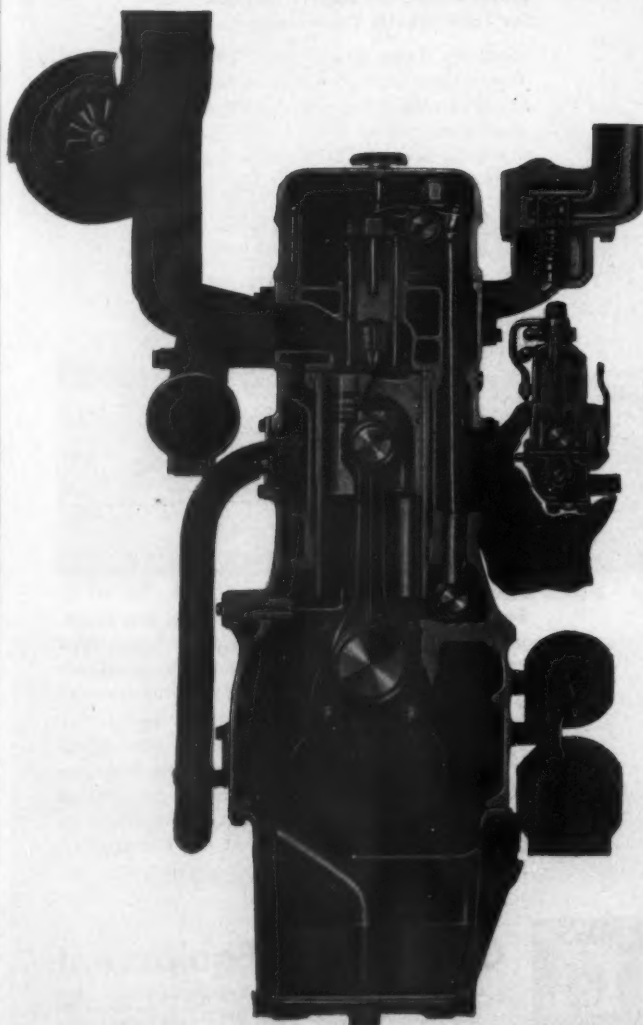
Concrete placing

Barletta kept other crews busy erecting forms and placing concrete for the tunnel floors, walls, and roof. A Lorain truck crane used a 1-yard

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Here's the all-new direct start 385 max. hp International UDT-817—a compact, heavy-duty 4-cycle, 6-cylinder engine thoroughly proven in six years of development and testing—backed by 26 years of experience in manufacturing and selling over 400,000 heavy-duty diesel engines.

Designed for versatile application in a wide variety of rugged construction applications, the UDT-817 answers the demand for dependable high power and lower cost operation on crushers, shovels, generator sets, hot mix plants, and for repowering on-or-off-highway earth moving equipment.

A wide variety of accessory equipment including air cleaners, flywheels for leading makes of torque converters and clutches, torque converter cooler, air control compressors, safety shut-off, instruments and engine controls can be furnished to meet your installation requirements. Base, radiator, hood and dash, clutch and power take-off are available for complete power units.

For more specific information or application assistance, merely call your nearby International Power Unit Distributor or Dealer.

BRIEF SPECIFICATIONS

Type	4-cycle turbocharged
Bore and Stroke	5 1/2 x 6
Number of Cylinders	6
Displacement	817 cu. in.
Max. hp	385 @ 2100 rpm
Rated hp	375 @ 2100 rpm
Max. Torque	1,040 lbs. ft. @ 1400 rpm
Compression Ratio	16.1
Weight	3,540 lb.
Lbs. per max. hp	9.3
Length, fan to flywheel	61 1/2"
Height	58 1/2"
Width	39 1/2"
Flywheel housing SAE	Flange 1

CONTRACTORS AND ENGINEERS

concrete bucket to pour the ready-mix into forms for the exterior and interior walls. Wherever possible, the crane was positioned on the excavation berms to place the concrete encasing the exterior rows of columns. Buggies were required to handle concrete for the center partition wall. Concrete was consolidated with Chicago Pneumatic vibrators powered by Homelite gasoline-driven electric generators.

To form the 9-inch-thick reinforced-concrete roof slab, which encases the top flange of the roof

beams, Barletta hung double 1x6's along the roof beams by using Richmond free-fit hanger frame Ty's supported on the top flange of the beams. Then 4x4-inch timbers, used between the beams, were supported by the double 1x6's. These 4x4's in turn supported the 3/4-inch plywood sheets making up the bottom form of the roof slab.

This type of forming technique made erection easy, for all work was done above the roof beams. The hanger screws supporting the double 1x6's were tightened from beneath

to bring the plywood up tight against the top flanges of the beams and minimize grout leakage. After a few roof pours, the contractor experienced some difficulty in removing the hanger screws that permitted plywood to be stripped from beneath the roof beams; the portion of the screw protruding from the hanger frame became embedded in the concrete slab. Short lengths of cardboard tubing, placed over the protruding portion of the hanger screw, eliminated the problem.

Concrete for the roof slab was

placed in many ways. The contractor attempted to schedule pour widths to allow ready-mix truck chutes to place the mix, but when this was impractical, buggies and crane-handled concrete buckets were used.

The slab was covered with a 4-ply waterproofing membrane that was topped with a 2-inch protective course of asphaltic concrete before gravel fill was placed. This fill brought the local street roadway to grade above the tunnel roof. A 4 1/2-inch blanket of crushed stone, laid over the gravel, was topped with a 2 1/2-inch asphaltic-concrete wearing surface for local Boston traffic. This upper-level street consists of two 34-foot roadways separated by a concrete divider.

Personnel

Frank Venti was the superintendent and Leo Picardi the assistant superintendent, for Barletta. George E. Lybrand was the resident engineer on the tunnel project for the Massachusetts Department of Public Works, which has Carl Sheridan as Commissioner. E. W. Kumpel, the district engineer for the department, is supervising the entire \$80 million central-artery project. **THE END**

Alcoa personnel news

Lewis P. Favorite has been elected vice president in charge of product sales and distribution for Aluminum Co. of America, Pittsburgh, Pa., to succeed Donovan Wilmot, who retired last month. Wilmot, known as a spokesman for the light-metals industry, has been with Alcoa for forty-six years.

Favorite joined the company in 1927 and for the past four years has been manager of product sales, except for six months' leave as director of the aluminum-magnesium division of the Business and Defense Services Administration, U. S. Department of Commerce.

Worthington promotes

Jack B. Laramy has been promoted to manager of sales of the Worthington Corp., Harrison, N. J. A 30-year member of the firm, Laramy has, for the past three years, served as assistant manager of the Marketing Division and Eastern regional sales manager.

OCA opens New York office

The Overseas Craftsman's Association has opened an office at 170 Broadway, New York City, headed by William H. Miller, the association's East Coast representative. The non-profit service organization represents a membership of top management, engineering, administrative, and crafts personnel specializing in major construction, engineering, and mining and petroleum projects abroad. The association provides members with a world-wide news service on foreign employment with American contractors in their respective fields; it in turn works with contractors in meeting their employment requirements.



FEATURES THAT ADD DEPENDABLE, ECONOMICAL POWER

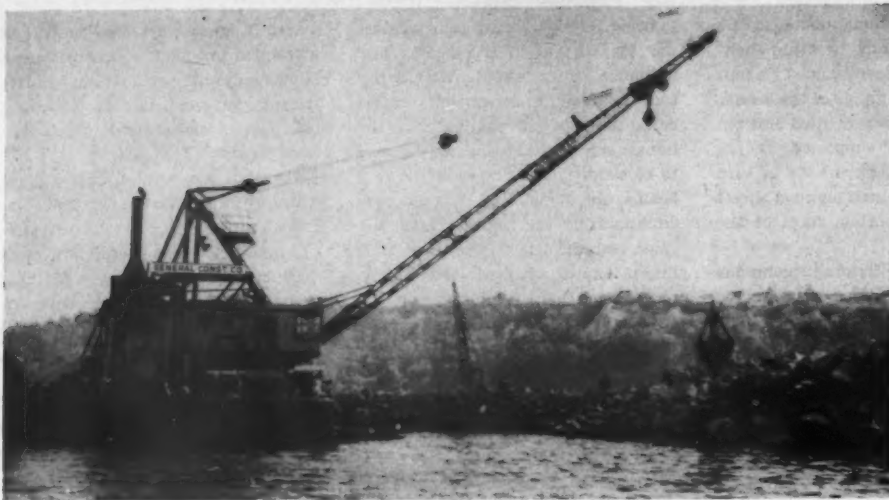
- Fast direct starts with 24-volt electrical system.
- Direct injection of fuel under pressures to 20,000 psi by individual camshaft actuated multi-orifice injectors.
- Exclusive IH twin plunger metering pump directs equal and precise amounts of fuel to each injector in proper firing order according to load and speed demands.
- Turbocharger puts waste energy in exhaust gases to work for higher power output and lower fuel consumption.
- Dual intake and exhaust valves for free breathing efficiency.
- Positive valve rotators keep valve seats free of deposits.
- Aluminum alloy pistons working in replaceable wet cylinder sleeves with velocity swirl flow water cooling on outside, jet oil cooling on inside, for long life operating temperatures.
- Fully counterbalanced Tocco-hardened crankshaft with seven big main bearings and torsional vibration damper for smooth, dependable high power output.

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International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

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For more facts, use Request Card at page 18 and circle No. 218



An American derrick places Class B rock in the breakwater for the new harbor on Puget Sound in Seattle. General Construction Co., Seattle, held the \$2 million contract for the 4,200-foot-long breakwater, which is part of the harbor construction program.

Contractors put tides to work

Extremes of tide, ranging from 10 to 15.5 feet, might have caused plenty of job problems in the construction of a long breakwater and bulkhead, plus a pier, for the small-boat harbor at Shilshole Bay in Seattle, Wash. But two contractors, working under separate contracts, adjusted their daily schedules so that the placing of gravel and rock for the breakwater, as well as the forming and placing of the concrete bulkhead, could be done during the period of favorable tide. Operations were suspended during the unfavorable period.

General Construction Co., Seattle, held the \$2 million contract with the U. S. Army Engineer District, Seattle, for the construction of the 4,200-foot-long sand, gravel, and rock breakwater that shields the harbor area. The second contract, between Manson Construction & Engineering Co., Seattle, and the Port of Seattle, provided for a 4,500-foot-long concrete bulkhead, 1,200 feet of rock bulkhead, a 900-foot timber dock, and other related facilities at a cost of more than \$1 million.

Located at the mouth of the Lake Washington ship canal on Puget Sound, the new harbor is one of six that will eventually handle the huge increase in small pleasure craft in this area. Construction of the Shilshole Bay basin, plus work planned, will provide mooring facilities for more than 1,500 boats from 16 to 75 feet long, parking space for more than 1,200 cars, and complete harbor facilities, including a marine service station, restaurant, and administration building. The new harbor will also relieve the heavy traffic through the canal locks.

The rock-faced breakwater, built up to an elevation of 20 feet above mean low water, roughly parallels the shore. The sheltered area behind it is about 4,000 feet long and ranges from 500 to 1,100 feet wide. Entrance channels at the north and south are 200 and 250 feet wide, respectively. The water in which the breakwater was built ranges to 30 feet in depth.

To delineate the shore side of the harbor, the Port of Seattle built a concrete gravity bulkhead wall supported on piling and rock fill. This bulkhead rises to an elevation of 17 feet above mean low water.

Between the breakwater and the

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The Challenger is designed to increase payload by decreasing empty weight. Available in level and low-bed models, the Challenger series has 18, 27, and 36 ton models. Low-bed models are available with Talbert's famous Removable Goose-neck* for quick, easy front-end loading.

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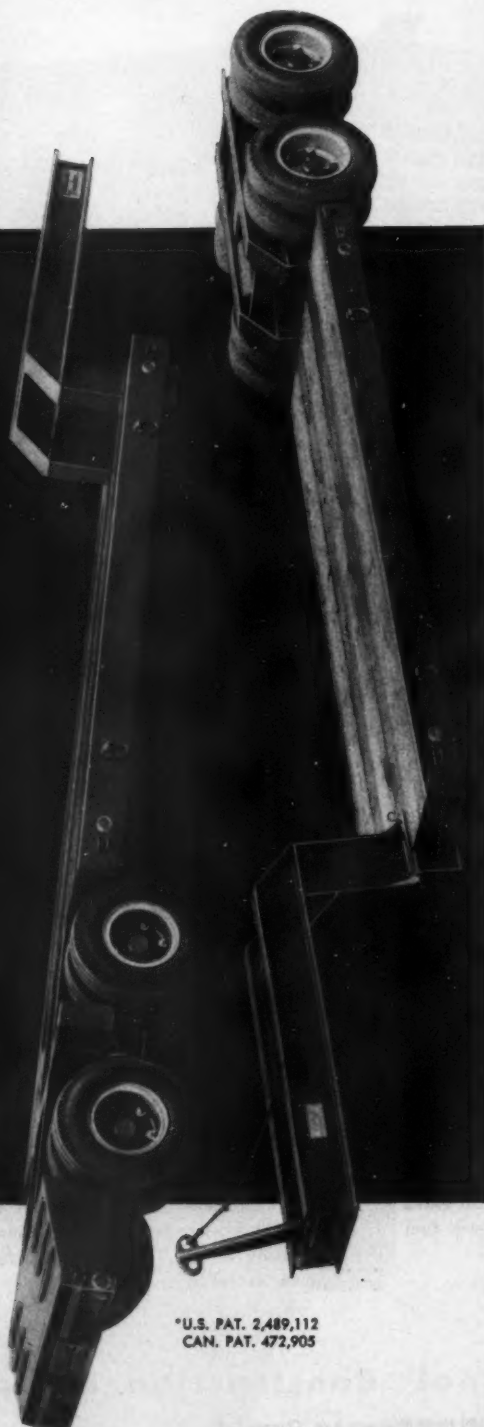
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they build new boat harbor

Manson Construction & Engineering Co., Seattle, which built the bulkhead and related facilities under a separate contract, uses a Michigan Model 125A tractor shovel to load the 8-yard skip of the derrick boat that is placing rock.



bulkhead wall, the harbor was dredged to minimum depths of 10 and 15 feet at low tide. Some of the material dredged from the harbor was placed behind the bulkhead wall to build up the area between the wall and the original bank. This area, graded and surfaced, provides a parking space. The remainder of the dredging was wasted.

The work done by Manson for the Port of Seattle also included a concrete boat-launching ramp and a long timber pier. The 30-foot-wide L-shaped pier projects 550 feet out from the bulkhead wall and then extends 400 feet at right angles into the harbor. The pier consists of 10-pile bents spaced at 8-foot centers. The piles are capped with 12x12 timbers, and the deck consists of 6x12 timbers. All timber for the pier was impregnated with a minimum of 12 pounds to the cubic foot of creosote.

Breakwater job

In building the breakwater, General Construction Co. first constructed a row of timber-pile dolphins on each side of the center line. The 7-pile dolphins were driven by a floating steam-jet rig using a 4,000-pound drop hammer. Spaced 47 feet to either side of the center line, the dolphins delineated the alignment of the breakwater and provided mooring facilities for the floating rigs and material scows.

The toe sections of the embankment were then built with Class C rock (graded from 2 to 150 pounds) on the seaward side and gravel on the harbor side. The rock and gravel were barged to the site and placed by floating rigs using orange peel buckets. One of these rigs was an American 50-ton steam crane, which used Esco buckets ranging from 1½ to 3 cubic yards in capacity. The other rig was a Northwest 80-D crawler, mounted on a barge and using an Esco 1½-yard orange peel bucket.

When the toe dikes were built up to plan grade, the area between them was filled with dredge fill. A 3-yard steam-powered clamshell dredge and a 5½-yard dipper dredge joined forces to excavate this material from the harbor area and load it into dump scows. The 3-pocket scows, carrying 100 cubic yards of

(Continued on next page)



Over two tons of stump and dirt, yet the International® Drott TD-9 4-in-1 "clams" on to this unwieldy load, and easily lifts it for loading on the truck. Boulders, chunks of concrete, similar heavy, bulky one-piece objects that won't go in a straight bucket are quickly and easily handled with the big-capacity clam-action 4-in-1!

Clam-action 4-In-1 "takes over" where straight buckets falter!



"Carry-type scraper" action gives inch-close grading accuracy, lets the earth "boil" into the bucket for convenient loading and fast disposal. You can't compare erratic old-style straight-bucket loader performance to depth-controlled work like this! And you can also use 4-in-1 "carry-type scraper" action to strip and spread materials with inch-close accuracy!

See how versatile 4-in-1 clamshell action takes over on job after job where single-action, old-style straight bucket or limited duty rigs can't possibly compete! Try the 4-in-1 as excavator-loader and as earth-rolling bulldozer. Prove to yourself that only a clam-action 4-in-1 gives you job opportunities, unlimited. See your International Drott Distributor for a demonstration.



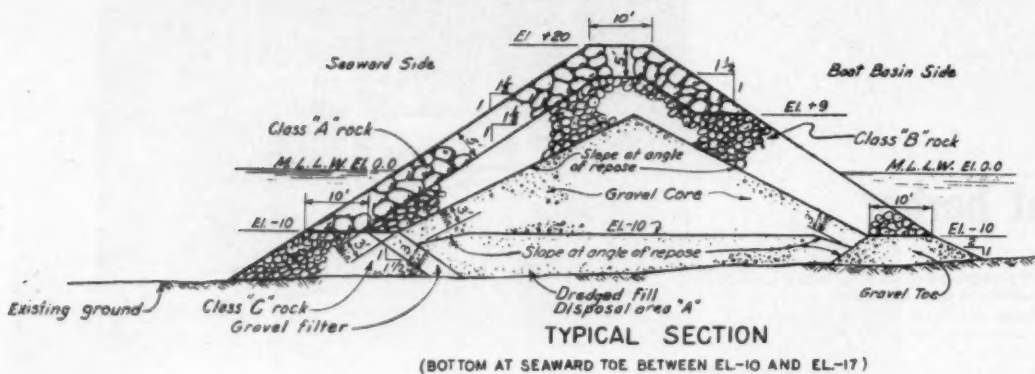
Use easily controlled clam action to fill the 4-in-1 with elusive loose materials (like this crushed stone)—in one fast gulp! Many owners use this speedy load-in-place clamshell action for close-quarters loading. Also, for positive clean-up on building projects, to practically eliminate need for hand-shovel labor!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

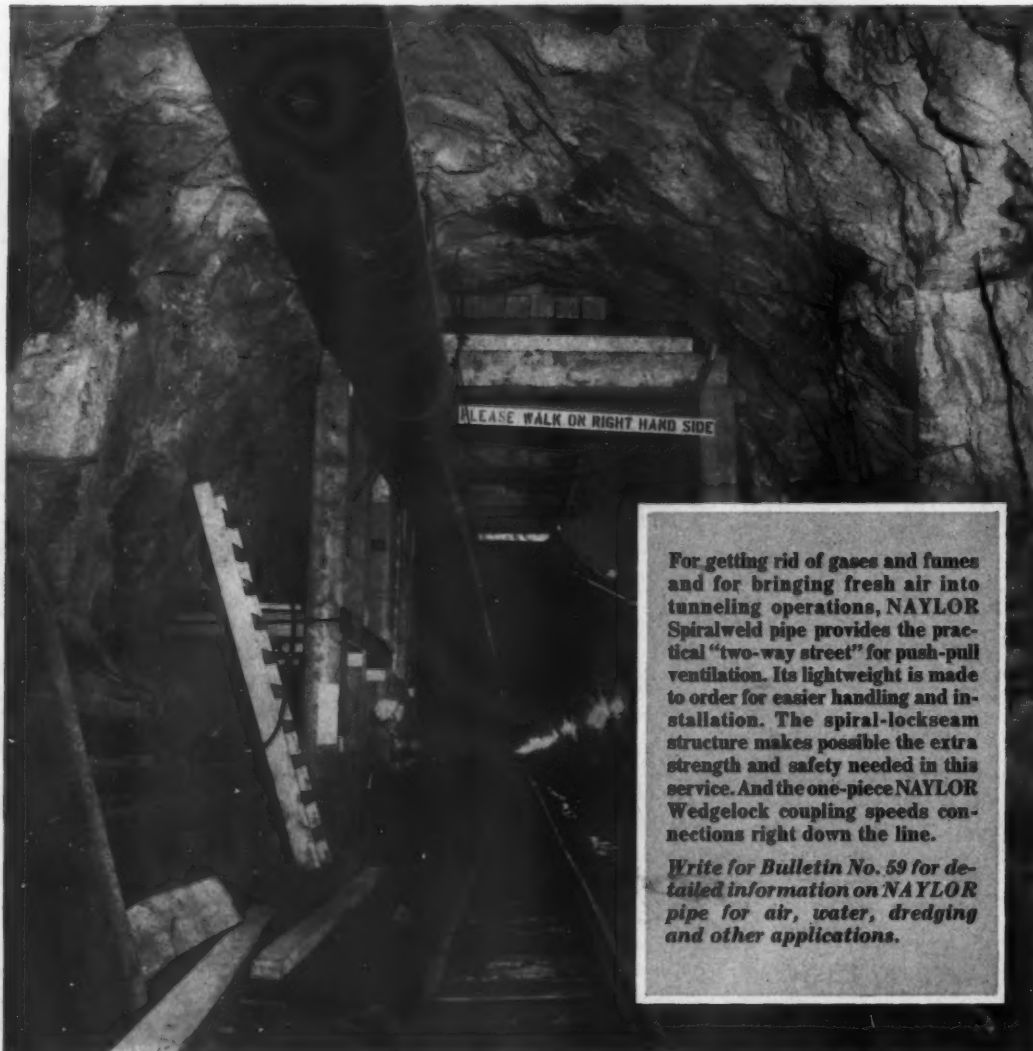


INTERNATIONAL DROTT

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TWO-WAY STREET For Ventilation



For getting rid of gases and fumes and for bringing fresh air into tunneling operations, NAYLOR Spiralweld pipe provides the practical "two-way street" for push-pull ventilation. Its lightweight is made to order for easier handling and installation. The spiral-lockseam structure makes possible the extra strength and safety needed in this service. And the one-piece NAYLOR Wedgelock coupling speeds connections right down the line.

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NAYLOR PIPE Company

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(Continued from preceding page)

material in each pocket, were towed out over the breakwater to dump the material into place.

The gravel core of the breakwater was placed over the dredge fill. Gravel produced at Maury Island by Klinker Sand & Gravel Co. was barged to the site and unloaded by clamshell buckets, and by a Cat D6 tractor-dumper that pushed the gravel off the flat-decked scows.

Next came the Class B rock (graded from 150 to 1,500 pounds including 25 per cent of C rock) and finally the protective topping of Class A rock (graded from 1,500 to 5,000 pounds) to give protection against the heavy wave action.

The several classes of rock came from two sources. Part was furnished by Pioneer Towing Co. Inc., from its quarry at Bremerton. This meant a 12-hour round trip for the tugs and barges. General Construction Co. supplied about half of the rock from its own quarry; the round trip for hauling rigs was 16 hours. In all cases, the rock was unloaded from the scows by the two floating rigs with orange peel buckets. When they had unloaded practically all of the rock, the D6 was put aboard the scow to push off the remaining material.

Tide governs placing

The action of the tides produced one critical situation in the placing of the breakwater embankment. That occurred when the gravel core was being topped out. At high tide, the core was completely covered with water, but at low tide, the top of it was exposed. The action of the waves and tide would have washed away some of the gravel if it had been left unprotected at low tide.

General Construction handled the problem simply by watching the tides and working fast at the right time. The gravel core was brought up to a point just below low tide where it was safe from wave action. Then, working on high tide, the contractor placed the remainder of the gravel to complete the section and quickly covered it with a thin protective layer of B rock before the next low tide. With this method in use, the work progressed smoothly, and there was no damage to the gravel core section.

Harbor dredging

The 24-inch hydraulic dredge Missouri, which completed the dredging of the harbor, placed some material behind the bulkhead wall for fill and disposed of the remainder in deep water outside the breakwater. This dredge moved approximately 800,000 cubic yards of material to deepen the harbor.

Total quantities of materials on the General Construction Co. contract included:

Dredged material	900,000 cubic yards
Dredge fill	150,000 cubic yards
Gravel	302,500 tons
C rock	39,000 tons
B rock	180,000 tons
A rock	82,000 tons

CONTRACTORS AND ENGINEERS

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The quantities of rock and gravel delivered to the job were measured by displacement of the scows making delivery.

Building bulkhead

Manson Construction & Engineer- Co. began work on the bulkhead and related features by driving the 1,200 treated timber piles that support the bulkhead wall. The piles were driven two to a bent, with the bents spaced at 7.5 feet. The piles average 35 feet long below cutoff. They were started with a jet and then driven to 25 tons bearing.

The floating rig that drove the piles had a 3,300-pound drop hammer in 70-foot fixed leads. A Skagit 3-drum hoist powered by a General Motors diesel operated the hammer.

As soon as the pile driving was well under way, the contractor began building the rock embankment around the piles. Rock was delivered from Dunlap Quarries at La Conner, Wash., in scows carrying 700 to 800 tons per load. Scows arrived at the rate of about one per day.

A steam-powered derrick boat was used to place the rock. A Michigan Model 125A tractor shovel, put aboard the rock scow by the derrick, loaded the rock into an 8-yard steel skip handled by the derrick. The derrick dumped the rock around the piling, building up an embankment 10 feet wide at the top with 1½ to 1 slopes on both sides. The top of this embankment was at an elevation of 8 feet above low water and a foot below pile cutoff.

The top of the rock embankment was finished by hand so that forms for the concrete cap—which is actually the footing of the bulkhead wall—could be placed. Since core rock was graded from 500 to 1,500 pounds with only a relatively small amount of finer material, the hand job of grading the surface to receive the forms was difficult. After the cap was finished, a 12-inch layer of 2½-inch rock was placed over both sides of the rock embankment.

Tide governs placement

The concrete cap was formed and poured in sections 97.5 feet long, each containing approximately 85 cubic yards of concrete. One of these sections was formed and another one poured each day. Six sets of forms were used, one set being stripped and moved ahead each day. The ¾-inch forms were backed with 2 x 6 studs at 16-inch centers and double 2 x 6 wales. They were tied through with ¾-inch she-bolts.

Again the tide caused problems, but this time it was the high tide. At low stages of tide, the top of the embankment was exposed for several hours, but at high tide the cap was partially or completely inundated. The contractor had to place concrete at low tide and yet overcome the buoyancy of the empty forms at high tide.

Manson solved the first problem
(Continued on next page)

Rock to cover the gravel core of the breakwater is cleaned off one of the flat-decked scows by a Cat D6 tractor-digger after most of the load had been placed by cranes and buckets.



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Chicago Heights, Illinois

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Fine-grading the top of the rock embankment in preparation for the placing of the concrete cap and the bulkhead wall is a hand job. Rock was graded from 500 to 1,500 pounds; only a small amount of finer material was present.

For more facts on insert, use coupon on circle No. 223.

(Continued from preceding page)

by watching the tide tables and placing the concrete so that there was ample time for finishing and set before the tide rose. This sometimes meant working other than the usual hours, but it presented no real difficulty.

To overcome the buoyancy of the section of forms not yet filled with concrete, the contractor placed sections of old street-car rail on the

forms and tied them down to the piling.

Ready-mix concrete was delivered to the site in transit mixers and bucketed to the forms by a Northwest Model 25 truck crane using a 2-yard bucket. The workman used Homelite electric vibrators, powered by Homelite portable generators, to consolidate the concrete. The concrete mix was designed to attain a strength of at least 3,000 pounds in seven days. It contained six sacks per yard of Type II cement. This crew made the 85-yard pour in as little as three hours.

Personnel

The superintendent for General Construction Co. on the breakwater project was W. H. Epping. On his



Superintendent W. H. Epping of General Construction Co. looks over the work on the breakwater from the deck of one of the rock scows.

staff were project engineer Bob Crook and office manager Arnold Crook. The project engineer on this work for the U. S. Army Engineer District, Seattle, was Fred Seidell. The resident engineer on the job was J. B. Van Faasen. Col. R. J. B. Page was the district engineer.

Work for Manson Construction & Engineering Co. was supervised by superintendent Gus Lorenz, assisted by project engineer Robert Winn. The chief engineer for the Port of Seattle is George T. Treadwell. Representing the Port as resident engineer is Edwards J. Stich. THE END

L. B. Foster news

Four new sales representatives have been named by the L. B. Foster Co., Pittsburgh, Pa. Leonard A. McGovern, assigned to the New York City office, will cover the Philadelphia area. Richard P. Gurley is the sales administrator of the construction-products division of the firm's Chicago office; Donald J. Cler, from headquarters in the Los Angeles office, will serve the Northwest; and John B. Manning, at the Pittsburgh office, will specialize in pipe sales.

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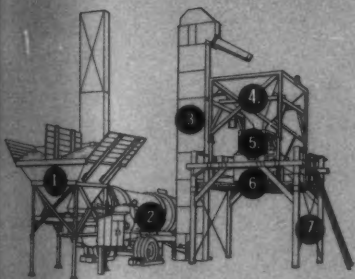
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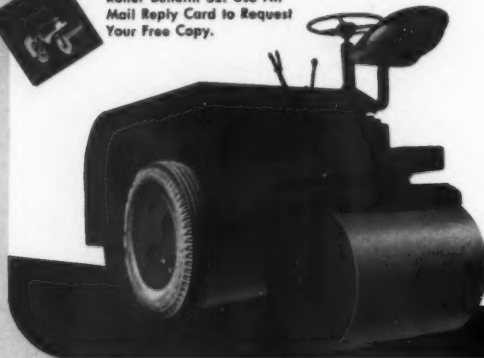
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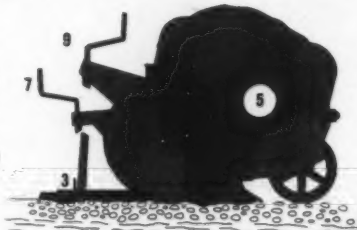
1. Hydraulic power trailing conversion which permits operator to engage towing truck pintle hook from the operator's seat.
2. Removable trailing wheels.
3. Hydraulic raising and lowering system located entirely within roller housing.
4. Choice of air or water cooled engines.
5. Electric brakes for trailing wheels available.

The 3-5 ton model complements the Littleford line of portable tandem rollers which also include a 2-3 ton model and a complete line of small rollers. Write today for descriptive bulletin.

Removable trailing wheels permit rolling close to building, other obstructions, fact the Model roll within 24" obstruction and time-consuming tamping.

TRUE-LAY PAVER-SPREADER

1. Strike-off blade
2. Compaction chamber
3. Adjustable screed
4. Screed hinge
5. Material hopper
6. Patented balancing beam
7. Jacks for adjusting screed
8. Balancing wheels
9. Jacks for adjusting balancing wheels



Compaction counts! . . . and you can count on Littleford's True-Lay for true compaction. The reason: the True-Lay is heavier, it's designed so that 75% of the combined weight of the unit and the asphalt is brought to bear on the screed.

The 2-in-1 tow type True-Lay does double duty: (1) paves a mat 4 ft. to 10 ft. wide, up to 6" in depth; and (2) spreads 4" maximum size stones. For Bulletin 33 containing full information on this remarkable machine mail the reply card below.

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COMPLETELY ENCLOSED
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SEND AIRMAIL REPLY CARD
REQUEST YOUR FREE LITERATURE

Gardner-Denver boast: a century of progress

"Equipment Today for the Challenge of Tomorrow," the Gardner-Denver centennial slogan, represents an idea that has sparked the company since Robert W. Gardner first made a fly-ball governor for steam engines in 1859.

Gardner's first "factory" was a one-room foundry and machine shop. Gardner, a Scotch immigrant, and his son J. W. manufactured the governors until 1890, when they moved into steam-pump production. When construction and mining industries in America turned from steam to compressed air for power, the firm entered the field of air compression. During the next 25 years its products became known throughout the country.

Meanwhile, in Denver, Colo., a firm was building a reputation to match Gardner's in making quality products for the construction industry. It was the Denver Rock Drill Mfg. Co., founded in 1905 and specializing in rock drills and air-actuated mining equipment. Denver and Gardner equipment often worked together.

Denver Rock Drill officials took a real interest in construction needs when the Bureau of Public Roads ordered a 47-foot Gardner compressor and Denver equipment for a Colorado road running from Durango to Silverton.

It was natural, then, for the two firms to join forces. In 1927, the Gardner-Denver Co. was formed in Quincy, Ill., where Robert Gardner laid the foundation for an industry that helped turn the once formidable feats of construction into routine operations.

Today, 30 per cent of Gardner-Denver's new products, built on research findings and production experience, are sold to the construction industry; the remaining 70 per cent go to mining, petroleum, and mass-production industries.

Fulton Bag changes name

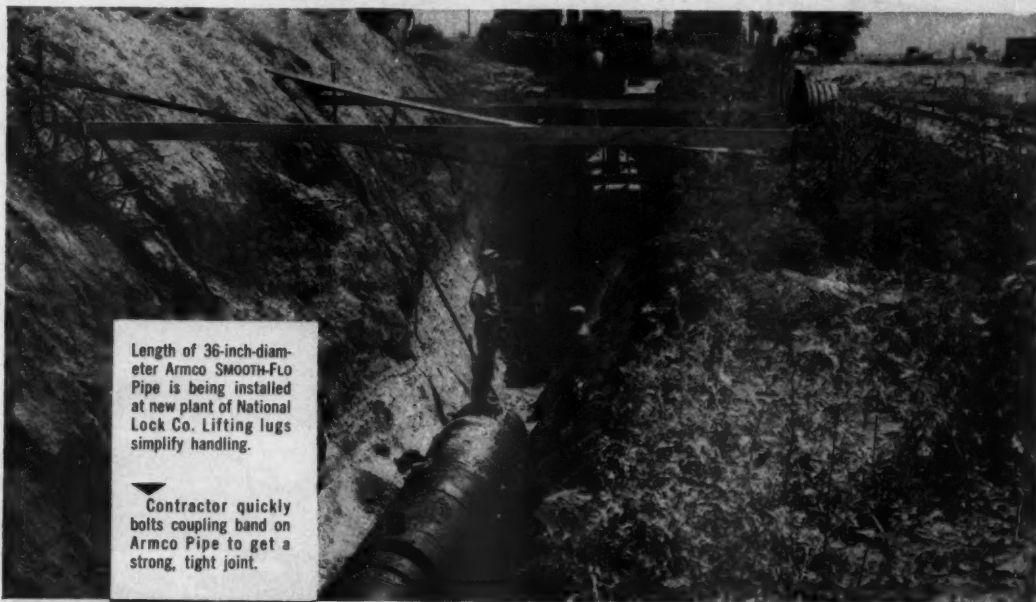
The name of Fulton Bag & Cotton Mills, Atlanta, Ga., has been changed to Fulton Cotton Mills, Inc., in order to more effectively describe the company's operations. The firm, which produces and finishes industrial fabrics, also manufactures canvas tents, tarpaulins, salvage covers, and other specialty items. Fulton stopped making textile bags in December.

Contractor's own story

"The Daniel V. McEachern Story: Saga of a Seattle Scot," by Dr. E. C. Nance, is available from The College Press, Box 275, College Place, Wash. The book is the story of McEachern and his brothers and their contribution to the building of great dams, bridges, hydroelectric power systems, highways, and buildings in the West, Pacific Northwest, and foreign countries. The three brothers founded a contracting company, which became the General Construction Co. of Portland, Ore., and Seattle, Wash.

MARCH, 1959

A 43-FOOT-LONG INTERLOCKING STEEL-SHEET PILE, coated with bitumastic enamel to prevent corrosion, is lined up before being driven for a new seawall at Wollaston Beach, Quincy, Mass. The mile-long wall, between beach and shore road, will have a core of 2,904 tons of Z sheet piling supplied by the Lackawanna (N.Y.) Plant of Bethlehem Steel Co. Strengthened at 15-foot intervals by sheet-piling buttresses, the upper 9 feet of piling will be encased in concrete, of which 3 feet will be below the sand level. The finished 2-foot-thick parapet-type wall will stand 6 feet higher than the upper sand level of the sloping beach and 3½ to 4 feet above the roadway.



Length of 36-inch-diameter Armco SMOOTH-FLO Pipe is being installed at new plant of National Lock Co. Lifting lugs simplify handling.

Contractor quickly bolts coupling band on Armco Pipe to get a strong, tight joint.



CONTRACTOR SAYS

"Long lengths and ease of joining Armco pipe made for good time"

This was the comment of Edwin Hogan & Sons, Rockford, Illinois, contractors who installed 3,750 feet of Armco Corrugated Metal Drainage Structures for the new Fastener Division plant of National Lock Co., Rockford.

The job was to provide a storm drainage system for the 632,000 square-foot structure. More than half of the Armco Pipe installed was Armco SMOOTH-FLO®, in diameters from 24 to 36 inches. Remainder was smaller diameter asphalt-coated Armco Pipe.

Principal advantage of Armco SMOOTH-FLO is its high flow capacity, an important factor in this installation. For example, most of the 36-inch diameter pipe was on a relatively flat slope of 2 inches per 100 feet.

The pipe was supplied in 20-foot lengths. Lugs, fastened to the pipe exterior, permitted quick attachment of

wire rope slings, and simplified pipe positioning.

For data on Armco Drainage Structures, send coupon. Armco Drainage & Metal Products, Inc., 4619 Curtis Street, Middletown, Ohio. In Canada: Guelph, Ontario.

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4619 Curtis Street, Middletown, Ohio

- ☐ Send new, concise data on Armco Drainage Structures
☐ Send new, FREE "Installation Manual"

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OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

For more facts, use coupon or Request Card at page 18 and circle No. 225



Nello L. Teer, Jr., president of Nello L. Teer Co., Durham, N. C., heads ARBA for 1959. Teer has served ARBA as vice president of the Southern District, and he is past president of the Contractors Division.

Where will road money come from?

That was the chief question facing ARBA convention delegates; money in Highway Trust Fund will be insufficient by next year

C-R-C Kelley Ripper Rips Deeper

FOR FASTER, MORE PROFITABLE PRODUCTION



On roadways and general excavating, the Kelley Ripper speeds up right-of-way clearance by ripping out in front of dozers and scrapers. The powerful Kelley Ripper rips through rock, frost, or hard-packed earth at depths ranging to seven feet. This means that you get more production in scraping and loading. For even greater production, two shanks may be used. A constant ripping depth can be maintained by tractor operator.

In strip mining, the Kelley Coal Ripper breaks up coal seams without producing the fines so often caused by blasting. Cost of both tractor and ripper is less—much less—than dynamite and blasting equipment.

There's a C-R-C Kelley Ripper to fit your favorite make and model tractor. Each ripper assembly is complete with tool bar, shank, adapter plate, hydraulic system, and operating controls. Find out how the Kelley Ripper can help you save time and money on roadways, general excavating, pipelines, or strip mining . . . write or call for complete details.



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In Canada: Canadian Equipment Sales & Service Co., Ltd., 7310 99th St., Edmonton, Alberta, Canada
For more facts, use Request Card at page 18 and circle No. 226

Highway financing problems garnered most of the attention of delegates to the 57th annual convention of the American Road Builders' Association in Dallas, January 19 through 22. The big problem before delegates was that of paying for the Road Program—without borrowing money and without extending the target date for completion of the Interstate System.

The financing problem and the progress of work on the Interstate System were the chief concerns of opening-day speakers. Sen. Dennis Chavez (D., N. Mex.), of the Senate Committee on Public Works, declared in his address that from 1956 through 1961 some \$10,750,000,000 would be spent on the ABC program and more than \$11,500,000,000 for the Interstate System. This, he said, "would provide funds to improve, to 1957 requirements, about 11,800 miles of roads or about 29 per cent of the total of 41,000 miles authorized."

Sen. Francis Case (R., S. Dak.), ranking minority member of the Committee on Public Works of the U. S. Senate, summed up the thinking of legislators and delegates when he said that the only big problem left is "the old pocketbook problem—where are you going to get the money?" Case declared that the Highway Trust Fund will "be out of cash when the ABC apportionments are made in June this year for the fiscal year 1961." And he pointed out to delegates that "over the span of the remaining years of the interstate program, the Highway Trust Fund will be short a gross total of \$13.3 billion under present estimates."

Possible solutions

Case also brought up new problems sure to affect highway financing: "Alaska at once and Hawaii in the near future will be asking for an allocation of some funds on a 90 per cent federal basis for the construction of some part of their highways."

In speaking of ways to solve the problem, Case mentioned several possible solutions, including an increase in the federal gas tax; taking money from the general treasury—which would add to the current deficit; allocating certain excise taxes to the trust fund; giving the trust fund a special borrowing authority; and extending or readjusting the authorized building program.

CONTRACTORS AND ENGINEERS



E. A. Cape, president of the Gulf Bitulithic Co., Houston, heads ARBA's Contractors Division in 1959.

Also concerned with financing was Rep. William C. Cramer (R., Fla.), a member of the House Subcommittee on Roads, Committee of Public Works. He said that despite the 1956 highway act, the 1958 act, and the recodification of all highway acts, new problems have arisen, and old problems, with us for some time, are posing a challenge to Congress. Among them he listed adequate financing of the trust fund, reimbursement demands by states that have had free and toll roads integrated into the Interstate System, highway safety, increasing the period for advanced purchase of right-of-ways from five to seven years, and the need for a study of progress on the Interstate System.

On the all-important subject of financing the trust fund, Cramer emphasized that full apportionments were made for the program for 1959 and 1960, and this means that "money will have to be borrowed from the general funds of the Treasury to meet obligations which will accrue under those apportionments." Because this money must be repaid before apportionments can be made for 1961, Cramer pointed out, "it appears that there would be no funds available to make apportionments for the Interstate System for the fiscal year 1961." Cramer noted that "the interstate apportionment for fiscal 1962 . . . would range from \$1.3 to \$1.5 billion per year, in accordance with amounts estimated to be available in the Highway Trust Fund for the interstate program, instead of the \$2.5 billion authorized in the basic legislation." This, Cramer said, posed "a serious situation which must be met at this session of Congress."

After dismissing as a possible solution an extension of the present 13-year period of work on the system, Cramer outlined approaches to solving the problem. One involves an increase in gas-tax levies. Another involves a special bond issue to cover the anticipated shortage in the trust fund, and meeting the cost of the bond issue. In this case, the time for which special levies are now authorized would be extended, Cramer said, "from the present total of 16 years to 17 or 18 years, or whatever period is needed to retire the bonds."

Reimbursement complicates job

Cramer also touched on the prob-

lem of reimbursing states for toll and free roads included in the Interstate System, a problem that he said has been "aggravated further by the deficit financing situation." Declaring that the cost of reimbursement would be \$4.83 billion, Cramer went on to say, "It is obvious that under the present trust-fund financing program to further burden that fund with this cost would have the effect of slowing down the actual new construction and extending the completion period far

beyond the 13 years contemplated."

Cramer also set forth two proposals for reimbursing states. Under one, he proposed that "interstate mileage increases, as a form of reimbursement, should not be added until 1968." Another proposal would make money available after 1972 for an additional 5-year period.

Reimbursement, Cramer felt, "should not become the reason for a slowdown in the completion of the present system or the hampering of

its necessary expansion in the future."

If this happens, he said, those states pressing for reimbursement would suffer a long-term loss for a short-term gain.

Not the obtaining of funds but their allocation was the chief topic of Rep. George H. Fallon (D., Md.), chairman of the House Subcommittee on Roads. In his speech, Fallon answered critics of the "needs" formula for apportioning money to states. He made it clear that the Interstate Sys-



"DEMONSTRATION convinced me"

says Illinois contractor

His 3 D 'Pulls' live up to promise

When the North Riverside, Ill., firm of DeGraaf & Woldman decided to buy scrapers for their earthmoving operations, the owners had exact requirements in mind. They wanted units of small dimensions but of good capacity for their primary business of grading and leveling in new housing developments. They wanted maneuverability, to work between houses and to build residential streets and driveways. And they wanted an all-weather scraper, with dependable controls and superior traction ability, that could work in most any footing in all kinds of weather and temperature.

Tested on wet, rutted ground

A demonstration was arranged for three competing machines. One was a LeTourneau-Westinghouse D

Tournapull® with 9-yd scraper. The testing ground was wet that day, full of ruts and mud holes. The "D" did the challenging. In one feature of its demonstration, the operator drove it into a mud hole, stopped, and maneuvered it out again. The other scrapers tried it—bogged down and had to be pushed out. Other tests went the same way. One competitor did show good speed on dry haul roads—but this same machine bogged down trying to cross a wet field, without a load.

Got extra benefits

DeGraaf & Woldman purchased 3 D 'Pulls' and have made good use of them since. Experience with these 138-hp earthmovers has resulted in extra benefits for the owners, such as low maintenance and fast job-to-

job travel (a 24-mi job move was made in less than an hour).

"Demonstration convinced me the 'D' was the machine for our work," states John DeGraaf, a partner in the firm. "We don't worry about wet ground now and the 'D' is very maneuverable in tight quarters. And it's an easy machine for a new man to handle; with those simple electric controls he gets to be a skilled operator fast."

See for yourself

Let us show you the "D" in action. You specify the day, place, and competition. There's no obligation.



Clean discharge of sticky black dirt is made in seconds by an L-W 9-yd D Tournapull at site of new housing development in Orland Park, Ill. The firm of DeGraaf & Woldman is using 3 "D's" in this area where 1,600 homes are planned for construction.

*Trademark DF-1987-BC-1



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

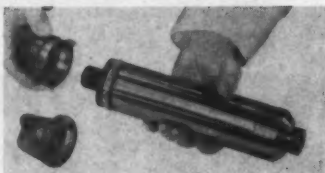
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G. A. Gilbertson, president of The Frank G. Hough Co., is the new CIMA president.

Only Viber offers you Vibrator heads with *Interchangeable* rubber or steel tips!

Eliminate expensive grinding...insure a perfect finish on exposed concrete surfaces...make costly forms last longer...extend the life of vibrator housings!

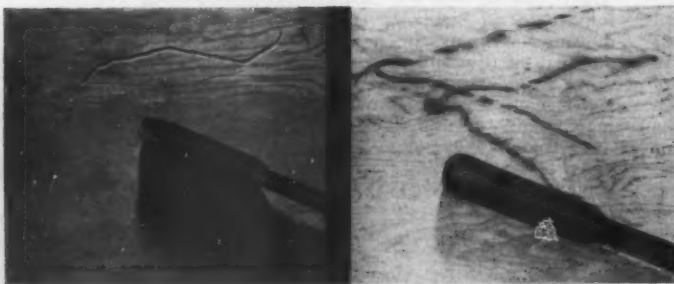


Tips screw on or off vibrator head easily, quickly...may be interchanged as required, replaced when worn.

YOU MAKE MORE PROFIT with Viber Vibrators! Viber replaceable rubber tips end damage to concrete forms and make forms last longer. By eliminating scarring of form faces, Viber rubber-tipped vibrators put an end to grinding and hand finishing of blemishes caused by gouged forms. Vibrator housings last longer because most wear occurs at the tip, which is replaceable.

TAKE YOUR CHOICE! Many contractors prefer steel-tipped vibrators for very harsh concrete with large aggregate, but the majority of Viber owners use rubber-tipped heads on *all* jobs. Whatever your preference, Viber (and ONLY Viber) gives you a choice of rubber OR steel—and lets you interchange them at will.

WHY NOT WRITE TODAY for the whole story!



Steel tipped vibrator heads often cause deep gouges and scars on form faces (left), producing blemishes on exposed concrete surfaces and requiring expensive grinding and hand finishing. Rubber-tipped heads don't damage form faces any more than a rubber eraser (right), extend form life, produce smooth finish concrete, eliminate hand finishing.



Viber Company, 726 South Flower Street
Burbank 22
California

VIBRATORS

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Request Card at page 18 and circle No. 228

(Continued from preceding page)

tem is, because of its importance to the national defense, essentially a single job, and that progress in its construction should be as nearly uniform as possible throughout each of the states. He said that "this is a national highway system, not a collection of state systems bound together. The fact that it is a national system explains why we agree that the federal share should be 90 per cent instead of 50 per cent as with the ABC system." Under this formula, which he felt to be the only practical one advanced, Fallon said that "every state will get exactly what it needs to complete its share of the Interstate System."

Also speaking at the opening session was Bureau of Public Roads Commissioner Ellis L. Armstrong, who called for construction and improvement to be carried on at an accelerated pace. He cited studies of such things as specifications, new developments in materials and equipment, standardization of bridges, and soils-resistivity equipment to show how research is being carried on to help contractors build more durable and more economical highways.

Deal with specific problems

At the general and special sessions throughout the rest of the convention, specific problems and ways of overcoming them were brought home to delegates.

Throughout the 4-day convention, delegates attended a number of working sessions at which specific problems were discussed, together with ways of overcoming them. Contractor financing held the spotlight at one of these sessions, when Nello L. Teer, Jr., vice president of the ARRA Southern District, and president of Nello L. Teer Co., Durham, N. C., spoke on contractor-banker relations and the improvement that has been made in them in recent times. At this same session, a panel discussion was held on "Financing and Planning Federal-Aid Highways in Metropolitan Areas."

A panel on the importance of standard bridges in the highway program, held on Tuesday, January 24, covered the use of aluminum, steel, and prestressed, prefabricated concrete beams, as well as treated timber in construction.

One of the most interesting of

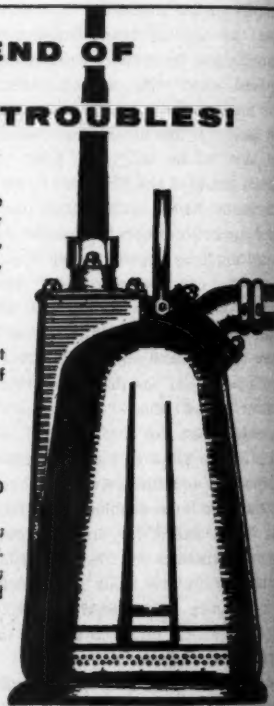
THIS IS THE END OF YOUR WATER TROUBLES!

FLYGT electric pumps work round the clock with practically no supervision or maintenance. They are fully portable, fully submersible — need no priming, no installation.

FLYGT pumps can run dry without damage — take a high proportion of solids without clogging.

Other FLYGT pumps:
B-80L: 3" hose; 6 hp; 185 lbs; 330 GPM; max. head 170 ft.
B-80M: only 9" diameter; 3" hose; 6 hp; 140 lbs; 300 GPM; max. head 115 ft.
B-150/200L: 6" or 8" hose; 65 hp; 1,200 lbs; 3,000 GPM; max. head 220 ft.

HIGHER HEADS WITH
FLYGT PUMPS IN TANDEM.



B-38L data: 1 1/2" hose; 1.8 hp; 79 lbs; 75 GPM; max. head 90 ft.

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CORPORATION

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CONTRACTORS AND ENGINEERS



Donald V. Buttenheim, left, publisher of *Contractors and Engineers*, has been elected the first vice president of CIMA; William C. Messinger, vice president of the Construction Machinery Section of Chain Belt Co., is second vice president.

these sessions, held on Wednesday, dealt with new techniques in electronics and photogrammetry. Among the papers presented was one on the use of nuclear energy in construction. In this paper, H. A. Radzikowski, chief of the development division of the Bureau of Public Roads, pointed out that nuclear energy is already being used in a device for measuring the degree of compaction secured in highway construction and for testing welding in bridge construction. Among other potentials for nuclear energy he included: use of radioisotopes in the quantitative analysis of the magnesium content of cements; small nuclear reactors for large equipment units; radioisotopes to determine the minimum effective mixing cycles for portland and bituminous cements; and the use of nuclear moisture and density determination devices to find the effectiveness of concrete-curing compounds. In his talk, Radzikowski compared the status of nuclear energy today with that of electronics only three years ago, when he presented the first paper on increasing engineering productivity through the use of photogrammetry and electronic computers.

A new electronic instrument, capable of "looking" at an aerial photograph and translating what it sees into terms that can be used by an electronic computer, was described in a paper at this session by William C. Cude, chief of the Topographical Engineering Department of the U. S. Army Engineer Research and Development Laboratories.

New officers

Elected to head ARBA for the coming year was Nello L. Teer, Jr., president of Nello L. Teer Co. of Durham, N. C. He succeeds Julien R. Steelman, president of the Koehring Co., Milwaukee.

John P. Moss, Moss-Thornton Construction Co., Leeds, Ala., succeeds Teer as ARBA vice president for the Southern District.

Vice presidents re-elected to office include J. E. McCracken, Bethlehem Steel Co., Northeastern District; Harold L. Plummer, chairman of the Wisconsin State Highway Commission, Central District; and W. A. Bugee, Director of Highways, Washington Department of Highways, Western District.

J. N. Robertson, District of Columbia Director of Highways, and a former ARBA president, was elected treasurer.

Named as directors for terms ending in 1962 were E. W. Bauman, managing director of the National Slag Association; Kenneth Lindsay, executive vice president of the Iowa Mfg. Co., Cedar Rapids, Iowa; William F. Morgan, of Blyth & Co., Inc., New York City; O. J. Porter of Porter, Urquhart, McCreary & O'Brien, Newark, N. J.; James W. Spencer of the Cornell University Department of Agricultural Engineering; Thomas K. Jordan, Director of the Wisconsin State Aeronautics Commission; and John O. Morton, Commissioner of the

New Hampshire State Highway Department.

E. B. Cape, president of the Gulf-Bitulithic Co., Houston, heads the Contractors Division.

CIMA elects

The new president of the Construction Industry Manufacturers Association, Inc., the manufacturers division of the ARBA, is G. A. Gilbertson, head of The Frank G. Hough Co.

Donald V. Buttenheim, who is the publisher of *CONTRACTORS AND ENGINEERS*, was elected first vice

president; W. C. Messinger, vice president of the Construction Machinery Section, Chain Belt Co., is second vice president; and Ray McLean, head of Jaeger Machine Co., is treasurer. Seven new CIMA directors elected include A. G. Crockett, Mack Trucks, Inc.; J. A. Miller, Rosco Mfg. Co.; R. L. LeTourneau, R. G. LeTourneau, Inc.; W. A. Nugent, Thor Power Tool Co.; J. E. Mitchell, Firestone Tire & Rubber Co.; A. J. Lichtinger, Wellman Engineering Co.; and B. M. Wallis, Schield Bantam Co.

THE END



Want to make
an extra \$70 per day
...per scraper?

Bigger graders can speed-up your big-yardage dirtmoving

The saving of just a few seconds on your dirtmoving cycle is mighty important... especially on your big-yardage jobs. For example, say you're working scrapers that haul 20 pay-yards, and each moves 100 loads per 10-hr. day. That's an average cycle of 6 minutes. When you shave just 33 seconds off this average cycle, you get 10% more output, or 110 payloads per scraper each day.

Those 10 extra loads give you 200 bonus pay-yards, at no extra cost. Even with dirt at the minimum bid price of 35¢ per yard, that's an extra \$70.00 a day in the profit column for each scraper you use!

Here's how you get it

Your scrapers always work faster when haul roads are kept smooth, and job is well drained. They move more loads when fills are firm and graded... when borrowings are kept bladed for easier loading.

For most profitable big-yardage dirtmoving you need graders that can keep pace with your big scraper fleet. You need big, heavy, 160 hp

or larger graders to help you save valuable seconds on each dirtmoving cycle... to help you move more 20-yd. loads per hour.

On the fill, your bigger grader spreads a full 12' or 14' blade-load of dirt at speeds to 7.5 mph... quickly grades for speedy compaction... levels footing for on-the-run dumping of next lift. In the cut, it smooths-out ruts and bumps... scarifies tough spots... blades down heavy side banks... casts out ditch-bank corner material... maintains drainage for extra days production during rainy seasons.

With its extra weight and power, your 160+ hp grader handles all jobs fast. It stays ahead on production, so whenever needed, it can smooth haul roads to keep your dirtmovers "highballing". Working faster, blading more yardage, your bigger graders smooth the way for faster earthmoving at every point in the cycle... for bigger output and extra earnings from every scraper on your job. They also cut accurately, to speed-up your finishing, get you off the current job, ready for the next one faster. And they help you get your final settlement quicker.

Fewer machines... lower cost

To do the same amount of work with ordinary 115 hp graders, you need MORE MACHINES... MORE MANPOWER... MORE TIME. And extra graders slow-down your dirtmovers and compactors.

You'll get more work done faster — less congestion — with Adams' 160 hp or 190 hp Model 660 graders. And you'll get it done at lower cost. These heavy-duty LeTourneau-Westinghouse graders give you the extra power, weight, and speed you need, to handle your future big-volume contracts faster. They'll give you up to 30% more output for only about 8% increase in ownership and operating costs.

Two extra-output models

Adams 660 is available with 2 power and drive options: (1) 160 hp GM or Cummins engine, constant-mesh transmission with 8 speeds forward (to 26.0 mph), 4 reverse (to 13.7 mph), plus 3 optional creeper speeds; or (2) POWER-Flow* 660 with 190 hp GM or Cummins engine, torque converter, 4 speed ranges forward, 0.0 to 27.4 mph. Call or write for an immediate demonstration.

*Trademark G-1561-DC-1



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

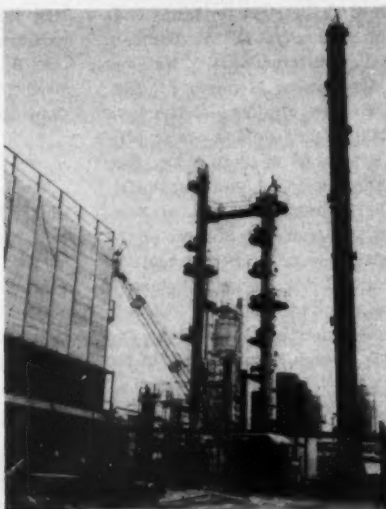
Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 230

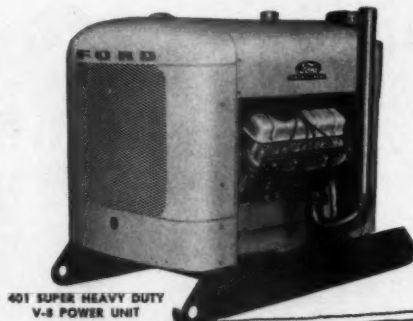
Adding zip to gasoline makes big construction job

**Towers of steel and towers of redwood
call for fast changes in work methods**

Erection of different types of structures—such as the 138-foot fractionating tower and the 40-foot-high redwood cooling tower—require swift changes in work methods for crews at the Augusta, Kans., refinery of Socony-Mobil Oil Co. The Lorain ¾-yard motor crane is using a 60-foot boom and 20-foot jib to assist in hanging elevated pipe for the installation.



330 DIESEL SIX-CYL.
POWER UNIT

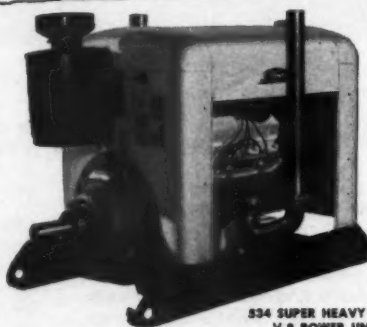


401 SUPER HEAVY DUTY
V-8 POWER UNIT

**Announcing...the addition of
four new FORD Heavy Duty Power Units!**



477 SUPER HEAVY DUTY
V-8 POWER UNIT



534 SUPER HEAVY DUTY
V-8 POWER UNIT

**Now...all Ford Industrial Engines
are available as engine assemblies
or power units!**

• These four new power units are built to handle your toughest work dependably and at low cost. Now from 134 to 534 cubic inches, there's a Ford power unit right for your job. The Super Heavy Duty V-8's, for example, offer many advances like fully machined combustion chambers, new fuel and lubrication systems, and more horsepower per pound of engine weight than ever before.

Ford power units and engine assemblies are available with SAE housings, HD power take-offs, and 5- and 8-speed transmissions. The 3 Super Heavy Duty V-8's can be equipped with a new 6-speed Transmatic Drive. And for fast parts delivery or on-the-job repairs, remember, there's always a Ford Dealer nearby to give the service you need when you need it.



220 DIESEL 4-CYL.
POWER UNIT



134 4-CYL.
POWER UNIT



172 4-CYL.
POWER UNIT



223 6-CYL. POWER UNIT



272 V-8 POWER UNIT



332 V-8 POWER UNIT

Ford
**INDUSTRIAL ENGINES
AND POWER UNITS**

INDUSTRIAL ENGINE DEPARTMENT • FORD Division of FORD MOTOR COMPANY
P. O. Box 598, Dearborn, Michigan

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

For more facts, use Request Card at page 18 and circle No. 231

While advertising men were dreaming up new jingles to sell super-octane gasoline, construction men were hard at work at the Mobil refinery setting up the unit to produce the premium fuel.

Putting the extra zip in gasoline is an expensive process. The gas costs the motorist but a few extra cents per gallon, but it cost Socony Mobil Oil Co., Inc., about \$5 million to add a catalytic reformer to their Augusta, Kans., refinery. The catalytic reformer, with a capacity of 9,000 barrels per day, takes straight-run gasoline and changes it into high-octane gasoline.

During this process, the heavier gasoline is separated from the lighter gasoline in four tall fractionating towers. In three capsule-shaped reactors, the gasoline is subjected to extremely high temperatures and pressures as it passes through some \$1 million worth of platinum pellets. The pellets act as a catalyst in the reaction.

It was also necessary to build a 40-foot-high redwood cooling tower to condense the gasoline. The tower, which was constructed from 14,000 precut redwood pieces, cools water by evaporation; this, in turn, cools the condensing coils.

Also built as part of the project was a steel-frame compressor house with Transite siding. The house shelters two large Cooper-Bessemer compressors run by a General Electric 700-hp electric motor. The compressors serve to liquefy the lighter vapors of the gasoline. Detailed plans, as well as the construction of the catalytic reformer, were handled by J. F. Pritchard & Co., Kansas City, Mo.

Contrast in methods

The job provided interesting contrasts in construction. Two giant gin poles, assisted by a Marion motor crane, were required to set the large fractionating tower—138 feet high and weighing 60 tons—on its pedestal.

An unusual and effective method was used to fireproof the I-beam columns of the overhead pipe rack. Rather than apply the concrete fireproofing when the steel was in place, the contractor saved money by encasing the beam in concrete while it was still on the ground.

Construction of the all-redwood cooling tower by J. F. Pritchard of California, Equipment Division, required a completely different approach. Instead of having to struggle with 60-ton chunks of steel, crews had to assemble some 14,076 pieces of redwood to form a cooling tower. This Chinese puzzle was delivered in three box cars containing 249 different types of precut redwood pieces. Their lengths ranged from 4 inches to 20 feet.

Fractionating towers

The four fractionating towers of the catalytic reformer, supplied by Wyatt's of Houston and Dallas, rest on a common concrete pad set down about 4 feet on solid clay. Bolts

CONTRACTORS AND ENGINEERS

anchor each of the towers to a separate pedestal rising from the footings to about ground level. The towers are designed to withstand winds up to 120 mph.

Setting the largest of these towers on its pedestal took some doing. It was necessary to put up two 100-foot gin poles straddling the pedestal. But in order to get the 100-foot gin poles in the air, the contractor had to set up one 80-foot gin pole.

After the gin poles were erected, the 60-ton tower arrived from the railroad on two flat-bed trucks. The two trucks, working back to back, hauled the tower as close as possible to the gin poles. Because the lead truck did not have enough room to drive between the gin poles, two cranes were used to work the tower between the poles. A Marion and a Lorain crane lifted one end of the tower, and, with one of the trucks still carrying the other end, the unit was worked into position between the gin poles.

The lift was made by an 8-part line secured to the tower at a point 50 feet from the top. As a Skagit 2-drum hoist took up on the line, a Marion 32 MR motor crane walked the base of the tower forward toward the pedestal.

Small backhoe in tight places

In addition to using big equipment for handling the heavy steel, the contractor found it convenient to have small rigs for work in tight places. A Sherman backhoe mounted on a Ford tractor was just the right piece of equipment for digging a trench between the columns of the overhead pipe rack. The hydraulically controlled Sherman hoe made fast work of digging the 4-foot-deep trench for the 8-inch cast-iron waste line.

Fireproofing columns

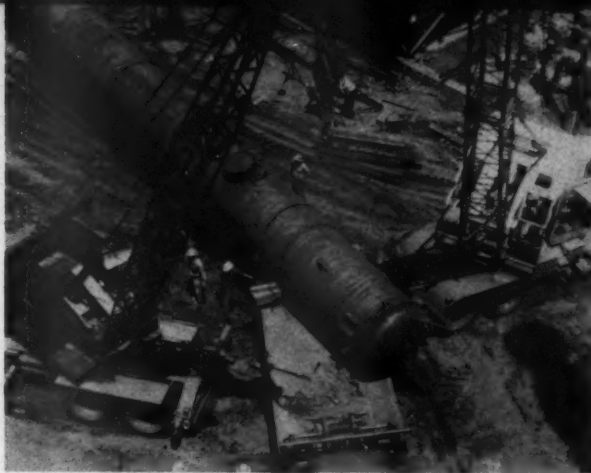
Fritchard tried a new method of fireproofing the I-beam columns that support the overhead pipe racks. Rather than encase the 6 to 8-inch wide-flange beams in concrete after they had been erected, the contractor decided it would be more convenient to form and pour the concrete with the beams resting horizontally on horses on the ground.

Only eight sets of wooden forms were needed to pour the 140 columns. Since only 11 feet of the 15-foot-high columns had to be encased in concrete, the handling and formwork were greatly simplified. The form itself consisted of 2x10 boards enclosing the two sides and bottom of the I-beam. Before the I-beam was set in the form, it was wrapped with mesh and pencil-rod reinforcing steel.

It was then a simple matter for ready-mix trucks to chute fireproofing concrete to the open forms. Of course, when there was a steel connection to be made within the concrete, the section had to be boxed off. Since one of the sides of the forms was only wedged in place, it

(Continued on next page)

The 60-ton 138-foot fractionating tower, hauled about 300 yards from a railroad siding by two trucks working back to back, is lifted from one of the trucks. The Lorain, left, and Marion motor crane get ready to lift one end and work it into position between the two gin poles used in the erection job.



... 28 yd heaped
... 21 yd struck
... choice of engines
(335-hp Cummins or GM)
... new, improved transmissions

... easiest loading scraper in all earthmoving materials.

• Power-transfer differential... keeps this machine working in soft footing when others bog down.

• Fingertip electric control... for easy steering and quick adjustment of bowl, apron, and direct-thrust tailgate to any setting.

• 6,552 sq in. of braking surface... largest, safest brakes in the field.

• Lowest net cost per yard... and we would like a chance to show you why on one of your jobs.

The new B Tournapull® with Fullpak® scraper is now bigger and better than ever. Its new advantages include:

Higher horsepower — Choice of dependable 335-hp Cummins or GM diesel engines.

Bigger load capacity — Bowl has same easy-loading Fullpak design but bigger capacity, profitable 38 yd heaped, and 21 yd struck.

New, improved transmissions — Power-shift transmission with heavy-duty torque converter (4 speeds forward to 31.7 mph)... or completely new hand-shift, step-gear transmission in constant-mesh (10 speeds forward to 30.1 mph).

Plus time-proven profit-builders available only on LeTourneau-Westinghouse Tournapulls:

• Low, wide Fullpak scraper design

Let us give you the complete details. We'll be glad to arrange a demonstration.



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 232



Tectum board roof decking is brought from a Chevrolet flat-bed truck to the roof of the 1-story brick laboratory included in the expansion program, by an E-Z Lift conveyor. A 1-cylinder gasoline engine powers the lightweight conveyor.

(Continued from preceding page)

was easy to strip the forms after letting them set for two or three days.

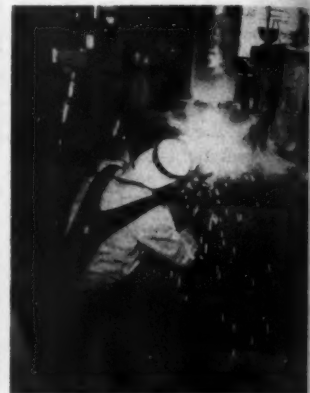
By using this method, the contractor was able to fireproof the beams ahead of time, and at his own convenience. The method required a smaller crew and saved on the total number of forms needed. The superintendent estimated that he saved 25 per cent of the cost of fireproofing the columns in the usual manner.

Cooling tower

Essentially, the cooling tower distributes water over the coils of con-

densers located on the ground beneath the tower. The water is then collected in a basement sump and pumped to a distribution system near the top of the tower. From here, the water drips down through a mass of redwood "fill" as it is cooled by evaporation. After the water is cooled, it is distributed to pass down upon the condensing coils. Three 14-foot-diameter fans, located on top of the tower, pull the air up through the "fill" section and speed the evaporation. To withstand the constant moisture, the entire structure is built of clear all-heart redwood connected with brass bolts and nails.

Practically all of the wooden parts of the tower were pre-cut and prefabricated at the mill in Merced, Calif. The 14,076 separate pieces were shipped to the project by rail in three box cars.



In the welding shop, where many of the pipe connections are made, a workman uses a Fleetweld No. 5 rod to weld the suction header that will be installed in the compressor building.



WELDYNAMICS

NEWS ABOUT ARC WELDING AT WORK CUTTING COSTS

CLARK CUTS DOWNTIME, REDUCES MATERIAL COSTS 25%

The Clark Machine and Welding Company, Inc., of Baltimore, Maryland, has a department which specializes in rebuilding industrial and construction equipment. They've grown in 25 years from a 4-man shop to the largest maintenance shop in Maryland—employing about 75 people. During that time they've tried just about every automatic hardsurfacing wire and flux available, and have had troubles ranging from high material costs to excessive downtime in the shop.



Rebuilding tractor rollers in the Clark shop. The fixture was designed and fabricated by Clark.



A. L. Ballard, Clark's welding foreman, "We've eliminated many production problems, cut costs and improved the quality of our work."

Work stoppages were caused when some welding wire would jam in the feed rolls of the automatic welder or the wire would stick. This, of course, not only caused the machine to be stopped, but affected the quality of the deposit as well.

Other granular fluxes with alloy wire were tried. Performance was better, but the alloy wire proved too expensive, according to Phillip Killen, Vice President and General Manager of the firm.

Al Ballard, the company's automatic welding foreman, has found that Lincoln agglomerated fluxes give him the most reliable performance. The fluxes not only cost 25% less than the most similar competing product, but they contain the alloying elements making it possible to use less expensive mild steel wire.

Mr. Killen states that the use of agglomerated fluxes and Lincoln automatic welding equipment have given his shop a definite advantage with consistently top quality work at a substantial saving.

HARDSURFACING INFORMATION MADE AVAILABLE

A series of How-to-do-it bulletins on Automatic Submerged Arc hardsurfacing are being published by The Lincoln Electric Company.

A basic bulletin, number 3200.1 on Automatic Submerged Arc hardsurfacing starts the series.

Specific information on hardsurfacing and rebuilding is presently available on the following items: tractor rollers, tractor idlers, mine car wheels, scraper blades, steel mill rolls, crusher rolls (with automatic), crusher rolls (with semi-automatic), Raymond bowl rolls, Raymond bowl rings, tractor treads and cement mill equipment.

Copies of these bulletins may be obtained by writing on company letterhead to:

The LINCOLN ELECTRIC CO.

Dept. 5326, Cleveland 17, Ohio

The World's Largest Manufacturer of Arc Welding Equipment

The structural members of the 40-foot-high tower consisted of 4x4's up to 20 feet in length, joined together with bolts and brass fittings. The outside walls were built out of a double layer of 3/4-inch shiplap separated by a 2-inch air space. The inside fill consisted of prefabricated 3x6-foot sections of redwood lath. The latticework sections could be collapsed for easy handling.

Since the largest member of the tower was a 20-foot 4x4, erection was done by hand with the help of ropes and booms. According to the superintendent, it normally takes about six weeks to erect one of these towers. On this job, because of the bad weather, it took somewhat longer. The number of pieces left over when the job was finished is a company secret.

Personnel

The project engineer for Society Mobil Oil Co. was B. A. Burdette. Fred Burdorff was the field engineer. For J. F. Pritchard, E. E. "Dutch" Wrone was the superintendent. The field superintendent for the cooling-tower erection was Newt J. Chandler.

The End

General Tire to build tire plant in Kentucky

An 80-acre tract on the northern outskirts of Mayfield, Ky., is the site of a third domestic tire manufacturing plant of The General Tire & Rubber Co., Akron, Ohio. Ground breaking is scheduled to take place this month, with construction and equipment installation to be completed and manufacturing begun in 14 months.

The factory, of one-story masonry construction, will initially have 400,000 square feet of floor space. The plant is so designed that it can be expanded to four times its original size as demand warrants. The initial phase is estimated to cost from \$8 million to \$9 million.

C. S. Johnson becomes division of Koehring

The corporate status of the C. S. Johnson Co., Champaign, Ill., has ended; it is now a division of Koehring Co., Milwaukee, Wis. The Johnson company, maker of concrete batching plants and accessory equipment, had operated as a wholly owned subsidiary of the parent firm since 1930. Stock distribution and personnel were not affected by the switch.

Ulrich Co. is renamed

The John J. Ulrich Co., El Paso, Ill., has been renamed the Ulmac Equipment Co., Inc. The new name was formed from the names of the company's co-founders, John J. Ulrich and R. D. MacDonald.

Ulmac products, including an all-new base spreader and a shoulder spreader, will continue to be sold and serviced exclusively by Caterpillar dealers.

Owatonna opens plant

A new 85,000-square-foot plant has been opened at the Owatonna, Minn., headquarters of the Owatonna Tool Co. The company makes hand tools, mechanical and hydraulic pullers and push-pullers, hydraulic rams and pumps, and many specially engineered hydraulic units.

Armco Drainage changes

C. B. Trueblood has been promoted to senior sales engineer in the welded-pipe sales department of Armco Drainage & Metal Products, Inc., Middletown, Ohio. He formerly promoted and sold the firm's products to Ohio state agencies.

The Dixie Division of Armco Drainage has appointed L. L. Williams to the newly created position of assistant division manager. Williams is succeeded in his former post as division sales manager by I. G. Tuttle; and W. M. Black, former manager of drainage and allied products sales, succeeds Tuttle as North Carolina state sales manager.

E. J. Lassere has been promoted to office supervisor of the Southwestern Division. He was previously head of the accounting department at the company's Houston office.

SPOTTING STONE WITH PRECISION on a dam reconstruction job in Massachusetts is a Michigan Model T-24 truck crane. Contractor Golden & O'Brien of Indian Orchard, Mass., used power up and power down on the crane's load line and boom to place riprap exactly.



Does your pusher have enough speed plus power to load your big scrapers fast?

If you are using big scrapers, you need a big pusher — one with the speed and power to minimize loading delays. You need a pusher that can position quickly, and push fast — with plenty of power at speeds that closely match the high forward speeds of your rubber-tired scrapers. You also need a pusher with the acceleration and power to boost your loaded scrapers out of the cut at high speed, to get them right into hauling gear for faster cycles.

To meet these requirements, LeTourneau-Westinghouse offers the giant, 436 hp "Twin-C" — the world's largest rubber-tired pusher. Here are some of its advantages:

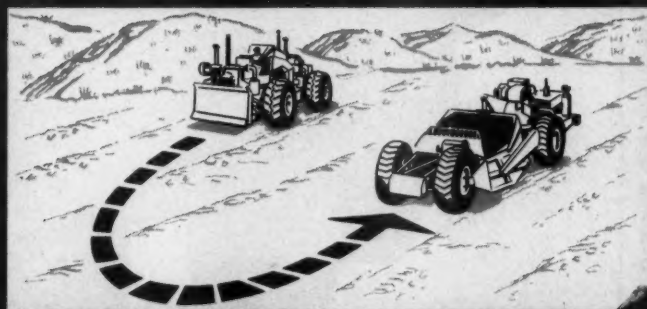
Extra power: tandem engines are synchronized thru twin transmissions and torque converters, to give pusher 436 hp, and 64,500 lb drawbar pull.

Speed: the Twin-C travels up to 20 mph forward, 5.8 in reverse.

Single unit pushing: there is no need to double-head tandem pushers when loading largest scrapers. "Twin-C" heaps 'em all, fast. You save time positioning and pushing, too... save the added cost of operating an extra machine with its extra operator.

For faster, more economical push-loading, investigate this powerful 436 hp Twin-C pusher. Phone or write for literature, facts and figures.

*Trademark TW-1747-DC-1



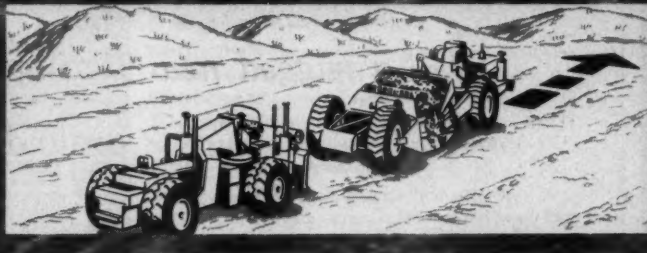
1 Positions quickly

With speeds to 20 mph and wagon-type electric power-steer, operator can quickly maneuver Twin-C into position for on-the-run pushing.



2 Pushes fast

With 436 hp, twin-engine power driving 4 big, wide-base tires, speedy twin-torque pusher tops out heaped loads fast.



3 Boosts scrapers out of cut

Twin-C's quick acceleration and power boosts scraper out of cut at high speed, lets scraper operator shift directly into higher haul gear.



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 16 and circle No. 234



Working through more than 100 miles of Texas country where a thin layer of soil partly covers solid limestone, R. H. Fulton Co., Inc., Lubbock, Texas, started operations on a gas pipeline by having this D9 rip to a depth of 5 feet.

Big tractors rip rock

*Limited access to right-of-way
and trenching through solid rock
are major problems on big pipeline job*

The digging of more than 100 miles of pipeline trench through solid rock was a challenging prospect as R. H. Fulton Co., Inc., Lubbock, Texas, started construction of two natural-gas pipeline projects in western Texas. Built for El Paso Natural Gas Co., the projects provided a gathering system for a producing field near Sonora, Texas, and a main line connecting the field with the company's transmission system.

One contract included 57 miles of 4 to 12-inch trunk lines and 4-inch laterals connecting a number of wells in the Sonora Gas Field in Sutton County. These lines converge at a compressor-station site near Sonora.

The second contract provided for the construction of 117 miles of 20-inch main line from this compressor station to a junction with the company's main transmission system near Midland, Texas. Practically all of the gathering system and some 50 miles of the main line lie in an area where a very thin layer of soil partly covers solid limestone—and this is tough digging, to say the least.

While other units of the spreads were being organized, the right-of-way and ditch gangs went right to work on the rock. Since there was relatively little clearing and the land was not exceptionally hilly, the right-of-way grading was handled largely by Cat No. 12 motor graders. Where big rocks had to be moved aside or where other help was necessary, the tractor-dozers of the ditching spreads lent a hand.

Big tractors rip rock

Big tractors with heavy rear-mounted rippers played a major role in loosening and breaking up the rock. Each of the two spreads had two D9's with Kelley or Ateco rippers on hydraulically controlled rear-mounts. Using a single tooth in the center of the machine, these rigs were able to go as deep as 5 feet into the rock.

In areas where there was a layer of topsoil of indefinite depth, the big rippers worked right down through the topsoil and broke up the underlying rock. On most of the gathering system and some of the main line, this scarifying enabled the ditching

announcing T/M's new

TITAN

a rugged new Trailmobile flat designed

around super-strong T-1 steel

roor gas pipeline crew

equipment to get down to grade without drilling and blasting.

Where the underlying rock was very hard and tough, the rippers first loosened as much as they could. Trenching equipment then opened trenches to this depth, clearing the way for the drilling and blasting crews. In these areas, there was much less drilling and blasting than would have been required without the preliminary ripping operation.

Drilling

To handle the rock that could not be ripped, each spread carried a number of Gardner-Denver Twin-drill sets cradled by Cat D6 and D7 side-boom tractors and powered by Gardner-Denver 600-cfm rotary compressors. Some of the compressors were on the usual rubber-tire mounts, while others were carried on Athey track wagons. In all cases, the compressors were towed by the tractors



A line of drill rigs sinks 2-inch holes, on 2-inch centers, which are staggered along opposite sides of the trench. Each rig consists of a Gardner-Denver Twindril set handled by Cat side-boom tractors; each tractor pulls a G-D 600-cfm rotary compressor.

Husky "J" shaped main rails are feature of new design that offers exceptional strength while eliminating unnecessary weight.

The Titan is available in conventional lengths up to 40 feet—with any kind of suspension.

*lighter! stronger!
lower in price!*

The use of brawny T-1 steel (105,000 lbs. tensile strength) in the main rails of this new Trailmobile achieves a new standard of performance for flat trailers. Weight has been cut by literally hundreds of pounds! In fact, this powerful all steel design all but matches the lightness of aluminum units.

Approximate weight is only 8500 pounds—so with a 72,000 pound gross vehicle weight the Titan gives you up to 50,000 pounds of payload capacity! And you get all this profit capacity in a trailer that costs less than any comparable steel or aluminum flat available today.

Further, the Titan will take tandem-tandem operation . . . can be equipped with any kind of suspension (including a standard tandem, 9 foot spread, Trail-Level air-tandem or sliding tandem) . . . and it can be easily converted to an open top with the addition of light aluminum racks.

Before you buy any flat, look into the singular advantages offered by the new Trailmobile Titan. You simply can't get better performance—at any price.

TR-777

TRAILMOBILE INC.

Cincinnati 9, Ohio • Berkeley 10, Calif.
Springfield, Mo. • Longview, Texas

Underside view shows how T-beam cross members go through husky "J" shaped main rails. Note that cross members are welded in place at intersection points.

Stake pockets accommodate lightweight aluminum racks for easy conversion to open top. Inset sketch shows unique one piece design of rub rail that adds extra strength.

that cradled the drills.

With relatively little drilling to do, the spread on the gathering system used only three of these drilling setups. The main line spread carried eight of them, and it was not unusual to see five or more of the rigs line up where the rock was really tough.

Blasting

For the 20-inch main-line pipe, it was necessary to dig the trench at least 5 feet deep. The drills punched out 2-inch-diameter holes, at intervals of about 2 feet, staggered on the two sides of the trench. Timken renewable bits were used.

The drill holes were loaded with Hercules Nitro-Carbo-Nitrate fertilizer-type explosive, with a single stick of 40 per cent dynamite in each hole. Even with these small holes, the breakage and fragmentation from this explosive were very satisfactory. The charges were detonated with Primacord and caps.

Trench excavation

After the shooting, tractors with angledozers pushed the material back into the trench and straightened up the right-of-way so that the ditching equipment and other units of the spread could operate in the usual manner. Three Cleveland 320 trenchers excavated a good share of the trench, especially where there was a reasonably deep layer of topsoil. The rest of the trench was excavated by a dozen or more backhoes. At least eight of these were Northwest Model 25 Pullshovels, several of them new on this job. Others were Bucyrus-



Holes are loaded with Hercules Nitro-Carbo-Nitrate. One stick of 40 per cent dynamite is used to detonate the fertilizer-type explosive.

For more facts, use Request Card at page 18 and circle No. 235



An Ateco ripper is used by another D9 to rip 24 inches into rock for one of the smaller lines in the gathering system for the El Paso Natural Gas Co. producing field. This was a separate contract from the 117-mile main line between the field and the transmission system.

(Continued from preceding page)

Erie 22-B and 15-B hoes. These rigs were able to excavate to grade with little difficulty, leaving relatively few rock outcrops that required secondary drilling.

Coating and wrapping

Pipe for the gathering system was precoated and wrapped in a stationary setup located in Sonora. An M. J. Crose stationary cleaning and priming machine and an M. J. Crose coating and wrapping machine were set up in the yard with appropriate pipe racks, so that the pipe moved smoothly from stockpile through the machines to the final stockpile. A Littleford dope pot supplied hot dope to the coating and wrapping machine.

On the main-line spread, the pipe was coated and wrapped in the field after being assembled by the pipe crews. Here the dope crew used an M. J. Crose cleaning and priming machine cradled by a D8 sideboom tractor. A C-R-C coating and wrapping machine followed, applying the dope, felt, and Fiberglas coatings as the pipe was cradled by Cat 572 sideboom tractors using rolling cradles. The dope supply was carried in four Littleford 30-barrel dope kettles.

The pipe-stringing operation on both jobs was handled by Dunn Brothers, Inc., Dallas. A Cinch bending machine and a D7 side-boom tractor handled the bending assignments.

Access is limited

When the crews pushed off from the compressor-station site at Sonora on the main-line project, the right-of-way led them through a sparsely settled semiarid region of sheep and cattle ranches. With practically no roads crossing the right-of-way for many miles, access for the crews was difficult and time-consuming. Many man-hours were spent transporting the workmen by bus, truck, and pickup from the assembly points to the work areas. The right-of-way sometimes ran as far as 20 miles between public roads.

Fences, however, were much more numerous, and landowners insisted that these be kept intact. Many gates were built, and hundreds of man-hours were spent opening and closing them as the crews moved into and out of the right-of-way.

The less stable the base . . . the more you need BMCO SPR-9's



BROWNING MANUFACTURING CO.
P. O. BOX 2707 • SAN ANTONIO, TEXAS • WAInut 3-4331

Exclusive independent oscillation of ALL wheels on the BMCO SPR-9 makes possible uniform compaction of soft spots and voids to specified densities without overloading any one tire. With the largest power unit of any roller in its class, larger displacement, and with four speeds forward and four reverse, the BMCO SPR-9 is the finest and most dependable self-propelled roller made. Try before you buy — you'll go BMCO.

For more facts, use Request Card at page 18 and circle No. 236

CONTRACTORS AND ENGINEERS



The drill rigs, using 2-inch bits, drilled 6 feet deep in this section to provide a 5-foot-deep trench for the 20-inch pipe.



This Cleveland Model 320 ditcher excavates the trench to grade for the line. When it encountered rock it could not handle, it dug as much as possible, clearing the way for drilling and blasting crews.



There's a

BROWNING MANUFACTURING CO.

dealer near you

ALABAMA
Ray-Brooks Machinery Co., Inc., Montgomery, Mobile
Tractor & Equipment Co., Inc., Birmingham

ARIZONA
Bio-A-Cos Equipment Company, Phoenix

ARKANSAS
Kew-Limerick, Inc., Little Rock

CALIFORNIA
Action Equipment Company, Stockton

FLORIDA
Florida-Georgia Tractor Company, Lakeland, Jackson-
ville, Tallahassee, Orlando, Tampa, Wa. Miami Beach
Ray-Brooks Machinery Co., Pensacola

GEORGIA
Tractor & Machinery Company, Atlanta

IDaho
The Southwest Company, Boise, Idaho Falls, Twin Falls

ILLINOIS
Halliburton Equipment Company, Melrose Park
Machinery, Inc., Springfield
Purdie Machinery, Inc., Peoria

IOWA
Hankins Machinery Company, Des Moines

KANSAS
Southwest Equipment Company, Dodge City
The Victor L. Phillips Company, Wichita

MARYLAND
John C. Loebl Co., Inc., Baltimore, Washington, D.C.

MICHIGAN
The Ames Equipment Company, Detroit

MISSISSIPPI
Caldwell-McIntosh, Inc., Jackson

MISSOURI
The Victor L. Phillips Company, Kansas City
Machinery, Inc., St. Louis

MONTANA
Hall-Perry Machinery Company, Billings, Butte, Great
Falls, Missoula

NEBRASKA
Nebraska Machinery Company, North Platte, Scottsbluff
T. S. McChesney Company, Inc., Omaha

NEW JERSEY
Equipment Distributors, Inc., Little Ferry

NEW MEXICO
S. C. Hildebrand Company, Albuquerque

NEW YORK
Hawthorn Road Equipment Inc., Rochester

NORTH CAROLINA
J. E. Hunt & Sons, Inc., Raleigh, Charlotte

NORTH DAKOTA
Schultz Machinery Company, Bismarck, Minot

OHIO
Lowry Equipment Company, Columbus
J. J. Turner, Inc., Cleveland

OKLAHOMA
Burt Smith Road Mach. Co., Enid, Oklahoma City, Tulsa

OREGON
Call-A-Mach Machinery Co., Inc., Medford
Wood Tractor Company, Portland

PENNSYLVANIA
Anderson Equipment Company, Pittsburgh, Bridgeville
Stewart Equipment Company, Philadelphia
Stewart Equipment Co., Harrisburg

SOUTH CAROLINA
Southern Equipment Sales Company, Columbia

SOUTH DAKOTA
J. B. Evans Equipment Co., Rapid City, Sioux Falls

TENNESSEE
Tri-State Equipment Co., Inc., Memphis
Stacy Brothers, Inc., Knoxville, Chattanooga
Southern Machinery Co., Inc., Nashville

TEXAS
Derry Bros. Machinery Co., Dallas
Caprock Machinery Company, Amarillo, Odessa
The Ray-Kramer Company, San Antonio, Corpus Christi
El Grande Machinery Co., El Paso
E. L. Lester & Co., Houston

UTAH
Anker Tractor & Machinery Co., Salt Lake City

VIRGINIA
Richmond Mach. & Equip. Co., Lynchburg, Richmond

WASHINGTON
American Machine Company, Spokane

WEST VIRGINIA
Fisher Supply Company, Huntington

CANADA

BRITISH COLUMBIA
Purdie Machine Limited, Vancouver

MANITOBA
Kew Equipment Limited, Winnipeg

NOVA SCOTIA
Coleman Machinery Company, Ltd., Halifax

ONTARIO
Ontario Equipment & Supply, Ltd., Toronto

QUEBEC
Laurin Equipment Limited, Montreal

SASKATCHEWAN
W. F. Feller Company Ltd., Regina

The pipe crew on the main line used two D7 side-boom tractors and two twin Lincoln 300-amp welding generators powered by Cat engines. These welders were mounted on Athey track wagons pulled by International TD-14 tractors. An M. J. Crose internal lineup clamp held the pipe in contact while the stringer bead welds were being made.

Behind the pipe crew came the welding gang with four Lincoln 300-amp welders on Athey track wagons pulled by D7 tractors. Pipe and welding gangs on the gathering system used Lincoln 250 and 200-amp welding generators.

Pipe must be padded

In these rocky trenches, it was important that the pipe should be very carefully bedded in soil that would protect it from being damaged by the rocks. Securing and placing this bedding or padding material was one of the major problems of the job, since there was little or no topsoil along much of the right-of-way.

Pockets of soil were located in valleys and depressions along the route, sometimes on or near the right-of-way and sometimes quite far off. A Cat D8 with an Ateco ripper cleared and opened these areas and then helped push-load a Cat DW20 scraper. The DW20 carried the soil to the right-of-way and spread it beside the ditch on the area used as a roadway for the other equipment. Hauls ranged up to as long as five miles for this padding material.

Just before the pipe was to be laid, a Northwest Model 25 crane with clamshell bucket clammed out the loose rock from the trench and placed the padding. C-R-C and M. J. Crose padding machines attached to the crane processed the padding soil as it was picked up from the right-of-way, removing the large-size rock which had become mixed with the spread material.

The lowering-in and tie-in gangs used a D8 side-boom tractor and two D7's with hydraulic side booms and lowering-in belts. A Littleford 20-barrel dope kettle supplied dope for the joints and for necessary patching.

Once the ditch crews got well ahead with the rock excavation, the

(Continued on page 54)

WATER and SEWAGE PLANTS

Constructed with Symons Forms



Sewage Plant . . . Two digestors and two filter tanks with wall heights from 8 to 23 feet formed with 12,000 square feet of Symons Forms.



60' High Bin Section . . . 8,500 square feet of Symons Forms were used on walls, slabs and stairways of sewage treatment plant.



10 Million Gallon Reservoir . . . Continuous pours of 50 ft. sections in heights up to 18 ft. Concrete was placed through pouring pockets.

Use of Symons Forms is not confined to one type of job. They can be used efficiently for almost any type of construction and on any height of wall. Symons Forms, Shores and Column Clamps may be rented with purchase option—rentals to apply on purchase price. Information on Symons products and services sent FREE on request.



Symons CLAMP AND MFG. CO.

4251 Diversey Avenue

Dept. C-9

Chicago 39, Illinois

MORE SAVINGS FROM SYMONS

For more facts, use Request Card at page 18 and circle No. 237

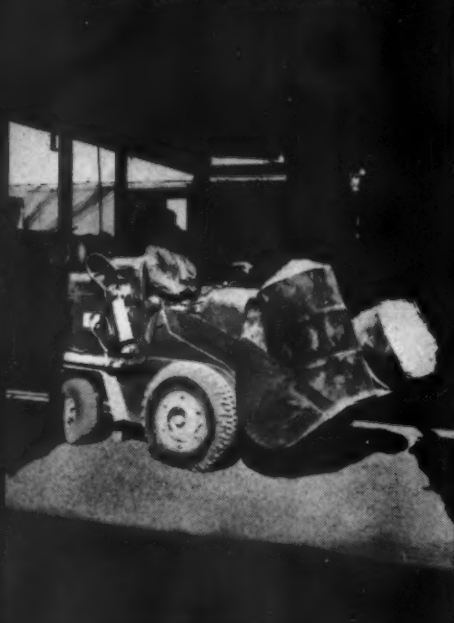
TWO-WHEEL DRIVE OR

2000 LBS.
carry capacity



Model HA

2500 LBS.
carry capacity



Model H-25

3000 LBS.
carry capacity



Model HAH

PAYLOADER® is the

More "PAYLOADER"
tractor-shovels have been
built and sold than all
other makes combined

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

ATTACHMENTS for various "PAYLOADER" models

Drott 4-in-1 Bucket	Fork Lift
Vibratory Soil Compactor	Crane Hooks
Hydraulic Backhoe	Pick-Up Sweeper
Superior Side Boom	Payhopper Buckets
Blacktop Spreader	Snow Plow
Hydraulic Grapple Fork	Backfill Blade
	Hydraulic Winch

The "PAYLOADER" line of tractor-shovels offers the broadest selection of models and types in order that all kinds of jobs and materials can be handled with maximum efficiency and economy.

Because these jobs, materials, locations, lengths of haul, working areas and production requirements vary so greatly . . . the size, capacity and features of these tractor-shovels must vary in order to meet specific requirements.

Two-wheel-drive "PAYLOADER" tractor-shovels are offered in three models with front-wheel-drive and one with rear-wheel-drive. These units have carry capacities up to 3,000 lbs., bucket tip-back of 40° at ground level enabling them to carry loads low and close to the machine for maximum stability and safety under all conditions.

They are compact and maneuverable for close-quarter operation indoors or outdoors. All of them have torque-converter drive and the model H-25 has a two-speed, power-shift transmission for the ultimate in ease of operation.

All of the two-wheel-drive models except the HA are equipped with power-transfer differentials which automatically provide more torque to the wheel with the best footing when slippery conditions are encountered. Gasoline or LPG power is available on all models; diesel power is available on both the HA and H-25 models.

The rear-wheel-drive model H-30R (not shown) has 3,000 lbs. carry capacity and in addition to stock-pile work can be used for digging and excavating. A wider range of attachments is also available.

FOUR-WHEEL DRIVE . . .

5000 LBS.
carry capacity



Model HU

7000 LBS.
carry capacity



Model H-70

9000 LBS.
carry capacity



Model H-90

standard of comparison

Three sizes of four-wheel-drive "PAYLOADER" tractor-shovels are available with either gas, diesel or L.P.G. power. All of these units have power-shift transmissions, power-transfer differentials, power-brakes and power-steering.

These rugged, heavy-duty loaders with large pneumatic tires and four-wheel-drive have the traction, flotation and power for large volume bulk material handling, excavating, stripping and grading on most any kind of footing. They can move from place to place with speed and mobility over paved or unpaved surfaces.

Tremendous breakout force and bucket tip-back at ground level enable these "PAYLOADER" models to get maximum loads, and keep them during travel. Exclusive "balanced-design" provides the utmost

stability and underslung boom arms eliminate operator hazards during lifting and lowering movements.

The widest range of exclusive attachments and devices offered, make it possible for these four-wheel-drive machines to handle many other jobs such as pipe laying, compacting, blacktop spreading, ditch digging, scraping, clamshell work, log and lumber handling, snow plowing and the like.

You get maximum efficiency when your equipment is matched to your job. You get maximum versatility when this equipment can be quickly converted to do numerous specialized operations.

It will pay you to consult your "PAYLOADER" Distributor regarding the productive capacities and most efficient use of the various models and attachments.



NEW LITERATURE

. . . is available without obligation showing the complete "PAYLOADER" tractor-shovel line and many of the useful attachments available for each model.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Ill.

- ☐ Send "PAYLOADER" line literature
☐ Send information on Model _____

Name _____

Title _____

Company _____

Street _____

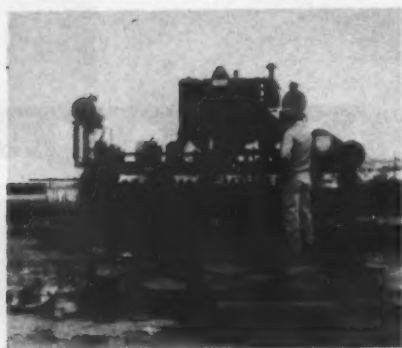
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State _____

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For more facts, use coupon or Request Card at page 18 and circle No. 241

(Continued from page 51)



The small-size pipe required for the gathering system is coated and wrapped in a yard set up in Sonora. An M. J. Crose cleaning and priming machine scrapes the pipe clean and applies a coating of primer before the pipe moves on to the coating and wrapping machine.

remainder of the work was done rapidly. On the main line, the crews moved ahead at a rate of about two miles per day, completing the 117 miles of line in just a bit over two months. Approximately 200 men of the crew worked six 10-hour days per week and lost very little time in spite of an occasional thunderstorm in the area.

Personnel

The supervisory staff for R. H. Fulton on the gathering system was headed by spread foreman C. R. "Clint" Schell. Other foremen were Bill Beaver on ditch; Neal Harris, welding; Loy Long, pipe; M. L. Holli-field, dope and yard; and Ira Suggs,

tie-in and lowering-in. F. C. "Arkie" Tally was spread foreman on the main-line project. The right-of-way foreman was J. Jett; the ditch foremen, Bucky Dixon and J. O. Flak; pipe foreman, Bill Schell; welding foreman, Burley Scott; dope foreman, Jack Riffe; padding foreman, Melvin Wimberly; and lowering and tie-in foreman, Dave McClain.

The chief inspector on both projects for the El Paso Natural Gas Co. was H. H. Rothmeyer. The spread inspector was Loy Edgar. All engineering and construction was under the supervision of J. F. Elchelmann, vice president and executive engineer for El Paso Natural Gas Co.

THE EN

Caterpillar offers free time, cost record books

A 24-page monthly "Time and Cost Record Book" has been prepared by the Caterpillar Tractor Co. to assist owners in determining the cost of owning and operating equipment. Included are twelve sets of pages for a daily record of each month's individual machine expenses for one year; an annual summary sheet for entering monthly totals; and a section devoted to simple methods of computing owning and operating costs. For on-the-job recording, a pocket-size "Daily Work and Cost Record Booklet" is available.

Copies of the book, Form 33215, and the booklet, Form 32818-G, may be obtained free of charge from Caterpillar dealers, or by writing to the Advertising Division of Caterpillar Tractor Co., Peoria, Ill. Requests for both publications should indicate title and form number.

Hawaiian Dredging news

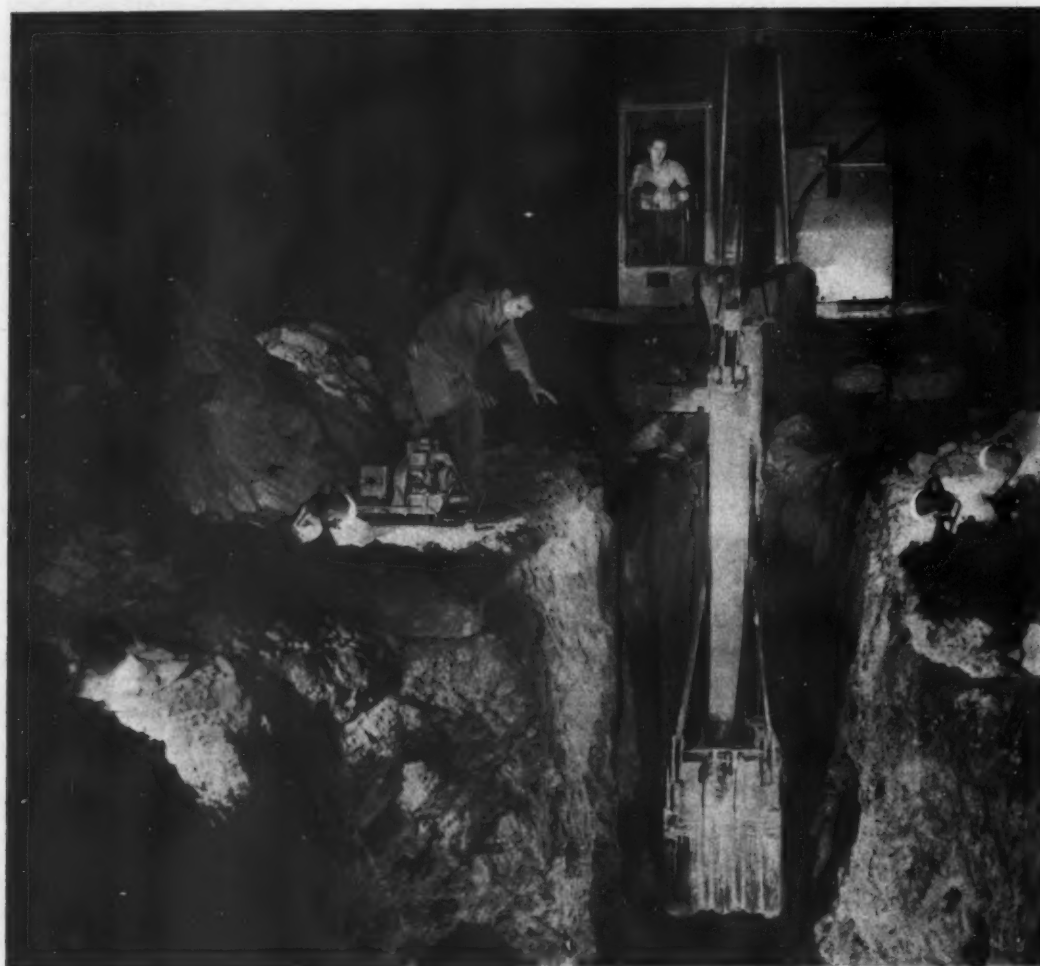
Charles W. Humme, financial vice president of Hawaiian Dredging & Construction Co., Ltd., Honolulu, has retired after 46 years with the offshore building and dredging concern. Humme will retain directorship in that firm and in six companies related to the parent organization.

Free safety booklet for teen-age drivers

A new booklet of safe-driving tips for teen-agers has been written by the National Safety Council and is being produced and distributed free of charge by the Standard Oil Co. (Indiana) and its marketing affiliates, American Oil Co. and Utah Oil Refining Co.

Designed to promote safer driving by teen-agers, who, according to the booklet, are involved in twice as many fatal accidents for the number of miles they drive as drivers over 21, the booklet contains tips from such professional drivers as state patrolmen, test track drivers, and truckers.

The free booklet is available exclusively from Standard Oil (Indiana) dealers in the Midwest, Amoco dealers in the East and South, and other dealers in the West.



USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

More For Your Money

New HOMELITE 3000 Watt Generators

You get more, you save more, with the new Homelite Model 8A Generators. You get more production power. Weighing only 140 pounds, complete with built-in gasoline engine, the 8A gives you 3000 watts. You get the power you need for electric saws, drills, floodlights and other labor-saving tools. You get the power you need for more work in fewer man-hours, quickly and easily.

Just as important, you get more performance with less maintenance and less operational trouble with the new Home-

lite Model 8A Generators. No rheostats or other controls to operate. Voltage is automatically controlled within four percent from no load to full load. There are no DC brushes. No commutator. No DC windings on armature. No trouble makers to slow down work and run up fix-it costs.

Three models are available... 115 volt and 115/230 volt, both 60 cycles, AC plus the 180 cycle model for running most efficient high cycle tools. Ask for free demonstration soon. The sooner the better for you.

Homelite factory branches are located throughout the country. Your nearest one is as near as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
GENERATORS

PUMPS • CHAIN SAWS
BLOWERS



HOMELITE • A DIVISION OF TEXTRON INC., 9803 RIVERDALE AVE., PORT CHESTER, N.Y.
In Canada — Terry Machinery Co., Ltd.

For more facts, use Request Card at page 18 and circle No. 242

SHRINKING PROFITS OR A BETTER RETURN ON INVESTMENT?

Answers to the problem

With more bidders . . . low bid prices and rising costs . . . the pinch on profits demands a closer look at all phases of your operations. One of the surest ways to improve your profit picture is to use modern earthmovers with big power, big capacity and big performance. When considering equipment you have to weigh facts against fiction. The facts on these three big "Eucs" prove that they can cut your earthmoving costs and bring a better return on your investment.

TC-12

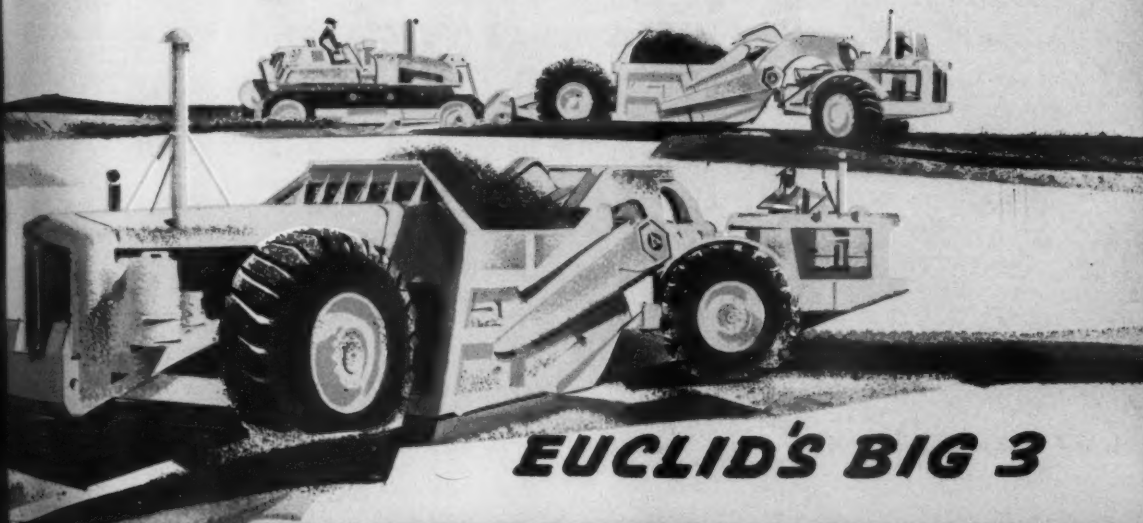
TWIN-POWER
CRAWLER

S-18

21-YD.
SINGLE ENGINE
SCRAPER

TS-24

24-YD. "TWIN"
SCRAPER



EUCLID'S BIG 3

**Functional "years-ahead" design
results in 5 major advantages**



TWIN

TC

CRAWLER



Best all-around performer in its class!



21 to 30 yds

S

SCRAPER

IN
C
1. **Twin Engines**, with a total of 425 net h.p. and separate Torqmatic Drives, permit a completely new concept of crawler design. The TC-12 is years ahead of other tractors in its work-ability for push-loading, dozing, scraping and other big tractor work.

2. **Independent Track Drives** provide almost unbelievable mobility and maneuverability. With separate power trains and Torqmatic Drives, each track can work all of the time with its individually controlled speed and power . . . a big advantage for dozing and push-loading and for work on steep side slopes.

3. **Easy, Fast Operation** is achieved by Torqmatic Drives . . . one for each track. There's no master clutch . . . change from one speed range to another is made under full power . . . pivot turns can be made fast by

reversing direction of one track. Operator has excellent visibility to front and rear, convenient controls and ample room for comfort.

4. **Track Alignment** is constantly maintained because each track is rigidly positioned to its main frame . . . each half of the tractor oscillates on a big diameter transverse shaft forward of and independent of the final drive.

5. **Unitized Assembly of Major Components.** Exceptional accessibility and unitized assembly of converter, transmission and drive case components, result in less downtime. For example, both drive sprockets can be removed and replaced in about one-third the time required for a competitive big crawler . . . final drives in just a fourth of the time.

VLER



Here's a big power, big performance team that paces the field in low cost yardage . . . the S-18 "Euc" Scraper of 21 yd. struck capacity and the TC-12 Twin-Power Crawler. With 425 net h.p. delivered to the power train and a separate Torqmatic Drive for each track, the TC-12 is the most powerful, most mobile crawler for push-loading. The S-18 loads fast and has a 336 h.p. engine with Torqmatic Drive and converter lock-up for high travel speed, outstanding gradeability and efficient use of engine power.

30 yds

3
Big Capacity of 21 yds. struck, 24 yds. at 3:1 slope and 30 yds. at 1:1 in the low, wide bowl originated by Euclid. By actual scale weight on job after job "Euc" scrapers carry more payload pounds than other scrapers of the same rated capacity.

Converter Lock-up with the 4-speed Torqmatic Drive stores maximum efficiency on grades and long, high speed hauls. The direct drive provides more usable power from the 336 h.p. engine without sacrificing the advantages of the torque converter.

Structural Strength without excess deadweight is built into the S-18 for long service life when push-loaded by the biggest tractors. Simple, rugged construction

from push block to cutting blade results in lower maintenance and greater dependability.

Hydraulic Controls for all scraper operations—bowl, apron and ejector—eliminate the expense and downtime caused by cable breakage. All controls are fast acting and completely independent . . . permit controlled spreading of the load and non-stop dumping.

Out-in-the-Open Accessibility of all major components saves maintenance time . . . "package" disassembly helps get the machine back in production faster when repairs are required. Planetary drives and differential can be serviced without removing the wheels . . . engine, torque converter and scraper jacks are out in the open with easy access for servicing.

RAPER

TWIN

TS

SCRAPER



More work-ability than any other scraper

Twin-Power permits the use of two torque converters, each driving a separate axle, to handle big loads under adverse conditions. Maximum usable horsepower of each engine is always available. Either or both engines can be used according to job requirements.

All Wheel Drive enables the "Twin" to self-load in most scraper materials . . . to pull out of soft sand . . . climb steep grades . . . to work when other scrapers bog down. There's no limitation of a power proportioner because each drive axle has its own power train.

Big Capacity of the "Twin"—24 yds. struck—makes it a high production earthmover. Heaped capacity at 3:1 slope is 27 yds.—at 1:1 it's 32 yds. The three inde-

pendent hydraulic controls for bowl, apron and ejector give fast, positive action . . . help cut cycle time . . . and there's no downtime due to cable breakage.

More Versatility helps beat the profit squeeze. The TS-24 moves the cheapest dirt on big jobs and small ones . . . on work that "can't be done with scrapers" . . . can work independent of other equipment or team up with the TC-12 "Twin" Crawler for the high speed, big yardage projects.

Exceptional Availability of the "Twin" is evidence of Euclid's years-ahead engineering that cuts downtime to an absolute minimum. Major components—engines, transmissions, converters, drive axles, hydraulic jacks—are easy to get to for servicing and maintenance.



EUCLID'S BIG 3 will give you a better Return on Investment.

Performance data on the TS-24 "Twin" Scraper, TC-12 Twin-Power Crawler, and S-18 Single Engine Scraper is available from your Euclid Dealer . . . ask him for facts and figures or a field demonstration.



EUCLID

Division of General Motors Corp.
Cleveland 17, Ohio



Printed in U.S.A.

Aluminum tubing cuts costs on concrete dam

A cost-reducing aluminum application for concrete dams was used for the first time at the Williams Fork Dam, near Parshall, Colo.

The dam was built by the block-and-lift method by Mountain States Construction Co., Pocatello, Idaho. Concrete sections were poured, one atop the other, in a series of great steps. Each section measured 5 feet high and up to 50 feet long. The 1-inch aluminum tubing was installed on the top surface of each lift. Working with 275-foot coils, two men snaked and anchored the tubing along the length of a section. The

tubing became embedded when concrete was poured for the next lift. Specially fitted ends were left jutting from the dam's downstream face to receive and discharge water.

About 33,000 feet of tubing, supplied by the Aluminum Co. of America, has been embedded in the structure to serve as cooling tubes. Water, circulating through the aluminum coils, removed heat generated as the concrete hardened, and prevented cracking. After the concrete hardened, and cooling was no longer necessary, the aluminum tubes were filled with grout and left in place.



During construction of the Williams Fork Dam near Parshall, Colo., a workman, right, installs Alcoa 1-inch aluminum tubing on the surface of a concrete section. The dam was built by the block-and-lift method; the tubing served as a cooling agent to prevent cracking when the concrete hardened.

HRB makes legal report on outdoor advertising

Special Report 41, a booklet compiling and evaluating state statutes and judicial decisions pertaining to "Outdoor Advertising Along Highways," has been released by the Highway Research Board. Part I of the 101-page report, refers to federal law and national standards, and contains a comparison of state statutes with these standards. Part II includes a discussion of the legal concepts pertaining to property interests, outdoor advertising regulation under police power, and control of outdoor advertising through eminent domain.

Appendixes include: a list of zoning and planning enabling laws; a summary of statutes and selected judicial decisions, by state; a table of cases; and a bibliography of selected readings.

Priced at \$4, the booklet may be purchased from HRB, 2101 Constitution Ave., Washington 25, D. C.

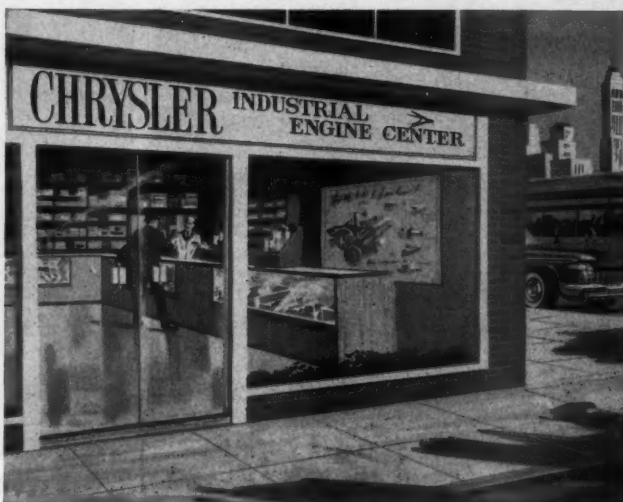
Thermoid, Porter merge

The Thermoid Co. has become a part of the new Thermoid Division of the H. K. Porter Co., Inc., Pittsburgh, Pa., as a result of action taken by the respective boards of the two firms. The new division will manufacture and market all products formerly made by Thermoid and Porter's Quaker Rubber Division; these include rubber and friction products for automotive, aircraft, and industrial use. The division will be headed by Warren E. Hill, former Thermoid president, as vice president and general manager; George Dauphinais, vice president of operations; J. R. Alexander, vice president of marketing; and E. G. Counselman, general sales manager.

Olin Mathieson, McGraw and corporate affiliation

Olin Mathieson Chemical Corp., New York City, has sold its interest in P. H. McGraw & Co., also of New York City, back to that company. The association between the two companies began three years ago in connection with the construction of Olin Mathieson's aluminum facilities in Ohio and Louisiana.

EXPANDED CHRYSLER INDUSTRIAL ENGINE CENTERS & DEALER NETWORK



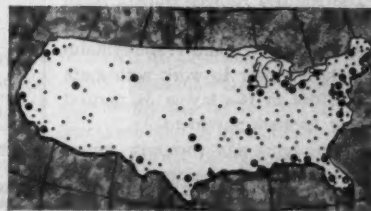
provide 24 hour service on parts and replacement engines for users of Chrysler-powered equipment

New Chrysler Industrial Engine Centers and dealer network virtually eliminate down time losses for even the most remote users of Chrysler-powered equipment.

Each engine center has a large and complete inventory of industrial parts and replacement engines available on a regular and 24-hour emergency basis, delivered by special service trucks. In addition, each engine center has ample service buildings, tools and trained engine specialists to provide service for all types of Chrysler-powered equipment in the area.

The fastest and most efficient service in the industry is now available for all Chrysler-powered equipment.

NEW BOOKLET "Forward Look in Industrial Power" outlines the entire expansion program of Chrysler M&I Engine Division. Request a copy on your letterhead.



NEW CHRYSLER ENGINE CENTERS and dealers are strategically located throughout the United States to provide the fastest and most efficient service in the industry.

CHRYSLER



MARINE AND INDUSTRIAL ENGINE DIVISION
CHRYSLER CORPORATION • DETROIT 31, MICHIGAN

Chrysler Industrial Engines (230 to 354 cubic inch displacement) power equipment for every major industry

Air Compressors	Ditching Machines	Standby Generators	Lift Trucks	Petroleum Pumps	Shovels
Aircraft Towing Tractors	Drilling Equipment	Hydraulic Cranes	Loading Machines	Pulp Machinery	Snow Mobiles
Arc Welders	Fire Pumps	Industrial Hoists	Mobile Cranes	Road Pavers	Street Sweepers
Concrete Mixers	Farm Combines	Industrial Tractors	Motor Coaches	Road Rollers	Winches
Construction Pumps	Farm Tractors	Irrigation Pumps	Orchard Sprayers	Scoop Tractors	Yard Cranes

For more facts, use Request Card at page 18 and circle No. 244



Donald D. King, assistant to the secretary of the American Society of Civil Engineers.

ASCE appoints D. King assistant to secretary

Donald D. King has been named assistant to the secretary of the American Society of Civil Engineers. King, who previously served on the headquarters staff of ASCE, was a former feature editor for *CONTRACTORS AND ENGINEERS*. He has also been associated with other magazines in the engineering field.

Photronix elects Barrett president, chief engineer

Elmer S. Barrett has been elected president and chief engineer of Photronix, Inc., Columbus, Ohio, an engineering service firm specializing in applications of aerial photogrammetry and electronic computation. Barrett succeeds Everett S. Preston, who has severed all connections with the company he founded to become director of highways for the Ohio Department of Highways.

In his new position, Barrett will be assisted by Earl M. Raley, who continues as vice president and assistant chief engineer. Barrett was also elected chairman of the board of managers of Barrett Associated Engineers, a consulting engineering partnership associated with Photronix and formerly known as E. S. Preston Associates. Barrett Associated performs design work for highway and bridge engineering.

Natural Rubber Bureau names research engineer

The Natural Rubber Bureau Road Research Laboratory, Rosslyn, Va., has appointed William T. Kellermann as field engineer to work with state authorities in the laying of natural rubber asphalt pavement.

Kellermann was formerly supervisory materials engineer, heading the bituminous sub-unit for the District of Columbia Highway Department. In his present position, he will be available for consultation with state engineers, to discuss the use of natural rubber and asphalt for road-surface treatment.

Western-Knapp names

Charles F. Skinner has been appointed vice president and general manager of Western-Knapp Engineering Co., San Francisco, Calif. Skinner has directed WKE's worldwide engineering, design, and construction services as general manager since 1955.

Beavers elect officers

Ray F. Rasey is the new president of The Beavers, succeeding John M. Sawyer. Other officers elected include Paul L. Grafe, senior vice president; Edgar F. Kaiser, vice president; J. P. Shirley, Jr., secretary-treasurer; J. W. Watson, assistant secretary-treasurer; and James L. Lovell, ambassador of good will.

Batthey & Childs news

In line with the company's expanding operations, Batthey & Childs, engineering and architectural firm of

Chicago, Ill., has been changed from a partnership to a corporation. Leonard C. Childs is president and Robert J. Wier, vice president, of the 37-year-old firm. Paul L. Batthey, former partner, is consultant.

Ford, Bacon & Davis news

Charles C. Whittelsey, president of Ford, Bacon & Davis, Inc., engineers and business consultants of New York City, Chicago, and Los Angeles, has been elected chairman of the board. He succeeds Everett S. Coldwell, who has retired. Whittelsey continues as president and chief executive officer.

Austin elects directors, two vice presidents

The Austin Co., engineers and builders of Cleveland, Ohio, has elected two new vice presidents: Hamilton Beatty, who continues as manager of sales development; and D. H. Kempler, who is general auditor for the organization.

Three new directors were also elected: L. Paul Gilmore, vice president, secretary, and treasurer of the firm; James R. Stewart, general counsel; and A. T. Waidelich, vice president and director of engineering and research.

MACKS...for every



MACK MODEL LRX 15-TON DUMPER

Extra trips per shift are won by Mack Model LRX's jack-rabbit agility in starting, turning and backing with capacity loads aboard. Built to shrug off the relentless pounding of big-yardage shovels, LRX is a hustler over the flat or up steep grades. LRX is loaded with features for top performance and economy: Mack or Cummins diesel engines up to 220 hp... powerful air brakes for steep descents... Mack ten-speed transmission... Planidrive rear-axle assembly.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 15 tons.

DIESEL ENGINES: 170 hp, naturally-aspirated Mack Thermodyne; 220 hp, naturally-aspirated Cummins; 205 hp, turbocharged Mack Thermodyne.

TRANSMISSION: Mack, selective, constant-mesh, 10 speeds forward, 2 reverse.

CLUTCHES: Mack single-plate, 253 sq. in. engagement (for 170 hp Mack Thermodyne); Mack two-plate, 416 sq. in. engagement (for other sizes).

FRONT AXLE: Mack, heavy-duty, drop-forged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gear train within wheel hubs.

BRAKES: Full air, with 7 1/4 cu. ft. compressor.

FRAME: Wide flange, rolled section I-beam.

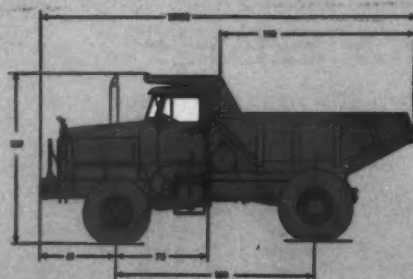
SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TIRES: Standard: Front, 12.00-24 (16P) rib; rear, 14.00-24 (18P) lug. Optional: Front, 13.00-24 (18P) rib; rear, 16.00-25 (20P) lug.

WHEELS: Cast, spoked.

STEERING: 60' turning circle diameter.

DUMP NOISE: Twin, double-acting, 3" cylinders providing 70° dumping angle.



MACK MODEL LVX 22 1/2-TON DUMPER

Built to pit power and strength against slam-bang sites, Mack LVX sticks to the job for years of sustained like-new performance. Rugged power-train offers a 300-hp diesel engine, Mack overgeared transmission (two-speed compound or torque converter), and Mack Planidrive rear axle. For smooth, swift maneuvering it's in a class by itself—thanks to ideal power steering system, air-assisted clutch, and offset cab for maximum visibility front and rear.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 22 1/2 tons.

DIESEL ENGINES: 320 hp, supercharged Cummins; 335 hp turbocharged Cummins.

TRANSMISSIONS: Mack, selective, constant mesh, 8 speeds forward, 2 reverse; converter and Mack 4-speed transmission; Torquatic converter and transmission.

CLUTCH: Mack two-plate, air-assist with manual actuation.

FRONT AXLE: Mack, heavy-duty, drop-forged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gears within wheel hubs.

BRAKES: Full air, with 12 cu. ft. compressor.

FRAME: Alloy-steel, wide flange I-beam.

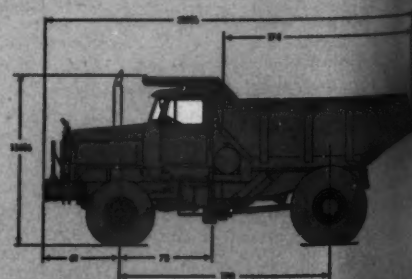
SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TIRES: Front, 14.00-24 (18P) rib; rear, 16.00-25 (20P) lug.

WHEELS: Cast, spoked.

STEERING: Hydraulic power-assist, turning circle diameter.

DUMP NOISE: Twin, double-acting, 3" cylinders providing 70° dumping angle.



EXCAVATING...FILLING...EQUIPMENT HAULING...AGGREGATE



H. Earl Fullilove, vice chairman of the board of governors of the Building Trades Employers' Association of New York City.

BTEA elects Fullilove

The Building Trades Employers' Association of New York City has elected H. Earl Fullilove vice chairman of its board of governors. The new office was created by the board to

meet the expanding scope of activities in labor relations and other phases of the construction industry.

Fullilove, third vice president of the association of building contractors and investing builders, was formerly director of labor relations and personnel for the George A. Fuller Co., general contractors.

AGC re-elects Selby

Charles A. Selby, president of Vermilya-Brown Co., Inc., New York City, has been re-elected to a second successive term as a director from New York of the Associated General

Contractors of America, Inc. Selby has served three terms as president of the Metropolitan Builders Association, which is the New York City chapter of the AGC.

Highway department news

Harold W. Reitz has been appointed acting district engineer in charge of District 3 of the Pennsylvania Department of Highways. Reitz, who will have headquarters in Montoursville, replaces Walter E. Fries, who has been transferred as assistant district engineer to District 8, Harrisburg.

New York engineer dies

Eugene E. Halmos, an associate partner and consulting engineer in Tippetts-Abbett-McCarthy-Stratton, an engineering firm of New York City, died last month after a brief illness. Halmos designed hydroelectric plants in New York State; steamship docks in New York, Baton Rouge, and New Orleans; and Naval drydocks at Portsmouth, N. H., Brooklyn, N. Y., Philadelphia, and San Diego.

Halmos was a contributing editor of the American Civil Engineers Handbook. He held membership in the American Society of Civil Engineers, the American Institute of Consulting Engineers, and the Society of American Military Engineers.

Asphalt Institute news

The Asphalt Institute, College Park, Md., has appointed Col. Wright Hiatt, Corps of Engineers, U. S. A. (ret.), to the post of managing engineer for the Atlantic-Gulf Division of the institute. From division headquarters in New York City, Col. Hiatt will direct engineering activities in twenty coastal and southern states, ranging from Maine to Louisiana. He will supervise engineering services at district offices in New York, Albany, Harrisburg, Richmond, Atlanta, Montgomery, and New Orleans.

Three appointed by PCA to new field offices

The Portland Cement Association has begun field-service activities in northern California, northern Nevada, and Oregon. Charles F. Moran, structural-engineering specialist, and Robert E. Jones, paving and general field engineer, have been assigned to the San Francisco office. Byron E. Jones, paving and general field engineer, will serve the state of Oregon from Portland headquarters, which are under the supervision of the association's Seattle, Wash., office. All three men were formerly located in the association's Los Angeles office.

Luckman Associates names

Richard C. Niblack has been promoted from chief designer to director of design for Charles Luckman Associates, planning, architectural, and engineering firm of Los Angeles and New York City. Niblack's most recent designs include the \$5½ million Signal Oil & Gas Co. building now under construction in Los Angeles and the Berlin Hilton Hotel in Germany.

Consulting firm names

Consultants & Designers, Inc., engineering-services firm of New York City, has appointed Frederick R. Einsidler vice president and general manager. He will supervise all divisions and branch offices, as well as sales, production, personnel, and contract administration.

The firm does consulting and design work for industrial corporations in the United States and Canada.

Every construction job...rugged or routine



DUMPER B-80 SERIES TRUCKS and TRACTORS

Mack profit-power personified! There are B-80's for heavy-duty hauling of platform or dump service. B-80's are powered with 170 to 232 hp gasoline or diesel engines, or with Cummins diesels 220 to 320 hp. Choice of Mack transmissions up to Quadraplex. Powerful, rugged braking power. Available in four- or six-wheel models including six-wheel drive units. Option of power steering.

CONDENSED SPECIFICATIONS

Body: Four dumper, 7 to 13 cubic ft. or mixer, 7½ to 8½ cubic ft. (other capacities may be specified).

Engines: Mack Thermodyne, 170 to 232 hp; Cummins, 220 to 320 hp with supercharger.

Transmissions: Mack: Five-speed, manual, Ten-speed (two-range), Twenty-speed Quadraplex. Availability contingent upon chassis.

Brakes: Mack: Heavy-duty, drop-

Frame: Channel: Alloy-steel, heat-treated; channel reinforcement, standard.

Tires: Available sizes and types: 11.00-24, 12.00-24 (Four-wheelers); 11.00-22, 11.00-24, 12.00-24 (Six-wheelers). Size availability contingent upon body.

Steering: Hydraulic power-steering (optional extra).

Only MACKS offer all these profit-power features

Quality that can't be measured by specifications. "Specs" only tell half the Mack story. Mack on-the-job records tell the rest. For over half a century, Macks have out-earned, outworked and outlasted any other make of truck on demanding jobs. That's because every Mack starts with the most advanced design and the most durable materials... is built to the highest standards of strength and precision... is tested through every stage of construction.

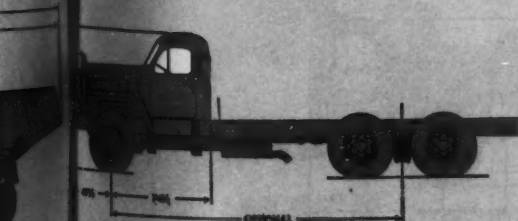
Trucks and tractors for every construction job. As dumpers, mixers; tractors or platform trucks, dependable, economical Macks are engineered right for every important construction task.

Widest choice of engines. Mack offers a complete range of proved truck engines: Mack gasoline engines at 150 hp... Mack Thermodyne* diesel, Mack gasoline or stock diesel engines from 170 to 450 hp.

Super-capacity and all-wheel-drive models. For capacities up to 40 tons where maximum flotation is required, a full line of tandem rear-axle Macks is available. For utmost traction, Mack front-wheel-drive assemblies offer you four wheelers with four-wheel drive and six wheelers with six-wheel drive—models that can move heavy loads over any surface that will support a truck.

Parts and service wherever you operate. Mack owners everywhere have complete parts-and-service coverage. Your nearby Mack branch or distributor carries nearly any part you'll need on the job... and behind them are Mack parts depots that can ship out any replacement part at a moment's notice.

For capacities of 30 tons or more where maximum flotation is required, a full line of tandem rear axle Macks is available.



MATERIALS HAULING...CONCRETE, DRY-MIX AND ASPHALT HAULING

←For more facts, circle No. 245

Optimistic and pessimistic outlooks for 1959 construction shared the spotlight at the 40th annual convention of the Associated General Contractors of America. Over 2,300 delegates, representing the 7,200 member firms of AGC, heard a long list of distinguished speakers air conflicting long and short-term outlooks at the meeting, which was held at Miami Beach, January 19 through 22.

State opposing views

The record crowd heard forecasts of a 6 per cent increase in construction volume in 1959, bringing the total figure to \$72 billion—about double the dollar volume of construction just ten years ago. Last year, despite the general business recession, the volume hit an all-time record of \$68 billion.

This optimistic note was dampened by several speakers, who warned of possible cutbacks in the interstate highway program by fiscal year 1961; of the increased power and influence of racketeer-infiltrated labor unions; the increase in the "do-it-yourself," rather than "construct by contract," method of construction throughout the country; and the fact that the United States still lags behind the Soviet Union in the development of missiles and space programs.

Report of the director

James D. Marshall, executive director of the AGC, presented the annual report to the opening convention session. He said that the general-contract system of construction, which has been strongly advocated by the AGC since its founding, "is now threatened with an evolution of affairs which could mean virtual extinction of that method and of the construction industry as we now know it." He added that these present trends must be met by a unified industry adjusting itself to meet the greatest competitor that contractors have ever known—day-labor operations by government agencies and the "do-it-yourself method" by private enterprise.

In the field of labor-management relations, Marshall noted a number of developments, including a "marked reduction" in work stoppages from jurisdictional disputes. This was at-



James D. Marshall, executive director, AGC.

"... the AGC ... is now threatened with ... the greatest competitor ... day labor operations by government ... and the do-it-yourself method by private enterprise."

AGC convention evaluates present and future problems

Delegates at 40th annual convention voice optimism and caution on '59 construction

MACKS..stock or custom built



MACK B-60 SERIES TRUCKS and TRACTORS

As dumpers, mixers, tractors and platform trucks, Mack B-60's have hung up records for economy on every kind of job. The "workhorses of the industry," they're powered with Mack Thermodyne gasoline or diesel engines from 170 to 205 hp. Four- and six-wheelers. Six-wheel models feature the exclusive Mack Balanced Bogie with Power Divider for non-spin traction through mud, loose gravel or sand. Longest mileage life in its class.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 6 to 12 cubic yards or as mixers, 5½ to 7½ cubic yards (with options).

ENGINES: Gasoline: Mack Thermodyne, 185 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp with turbocharger.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Ten- and twenty-speeds both on- and off-highway types. Availability contingent upon chassis models.

FRONT AXLES: Mack, heavy-duty, drop-forged I-beam. Three available sizes.

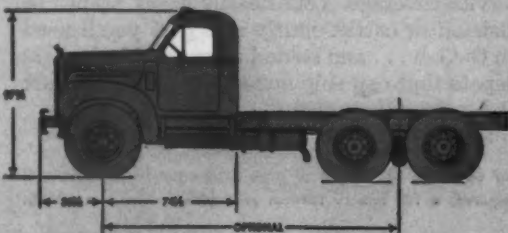
REAR AXLES: Four-wheelers: Mack Dual Reduction—with radius rods and torque

arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider. Three bogie sizes available.

FRAME: Channel: Alloy-steel, heat-treated, pressed; channel reinforcements for maximum services (standard or optional extra).

TIRES: Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler). 10.00-20, 10.00-22, 11.00-20, 11.00-22, 11.00-24 (Six-wheeler). Size availability contingent upon bogies required.

STEERING: Hydraulic-power type (optional extra).



MACK B-40 SERIES TRUCKS and TRACTORS

With big-truck capacity and stamina ... with small-agility and economy ... Mack B-40's are always in demand as dumpers, tractors, mixers and platform trucks. Magnadyne gasoline engines develop 150 hp at low, prolonging engine speeds. Mack transmissions up to 20 speeds. "Quada" Four-wheel models and six-wheelers with Power Bogie with Power Divider. All-wheel-drive models. Like all Macks, B-40's are engineered, built and tested for one objective: sure-fire performance on rugged jobs and long periods of time.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 5 to 10 cubic yards or as mixers, 5½ to 6 cubic yards (with options).

ENGINE: Gasoline: Mack Magnadyne, 150 hp.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed two-lever Duplex. Twenty-speed Quadruplex. Ten- and twenty-speed, both on- and off-highway types. Availability contingent upon chassis models.

FRONT AXLES: Mack, heavy-duty, drop-forged I-beam. Four sizes. Mack, front-wheel drive (for six chassis).

REAR AXLES: Four-wheelers: Dual Reduction. Six-wheelers: Dual Reduction, through-drive, inter-axle Mack Power Bogie. Channel reinforcement (optional extra).

TIRES: Available sizes and types: 10.00-20, 11.00-20, 11.00-22 (Four-wheeler). 8.25-20, 9.00-20, 10.00-20, 11.00-20 (Six-wheeler). Availability contingent upon chassis.

STEERING: Hydraulic-power type (optional extra).



EXCAVATING...FILLING...EQUIPMENT HAULING...AGGREGATE

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struction



Opening-session speakers and association officials at the speakers table are, left to right, William E. Dunn, assistant executive director of AGC; Victor Riessel, labor columnist; James W. Cawdrey, 1959 AGC president; and Dr. Wernher von Braun, Director of the Development Operations Division, Army Ballistic Missile Agency.

tributed to the work of the National Joint Board for the Settlement of Jurisdictional Disputes. This board was originally promoted by the AGC, he pointed out, and has been consistently supported by the association.

The executive director also observed that rivalry between building trades and industrial unions in the merging of AFL-CIO unions is developing into "one of the most serious threats to both general and specialty contracting which the construction industry has ever faced."

Space age discussed

In the second year of the space age, the United States has "not yet met the challenge" of the Soviet Union in the development of missile and space programs, Dr. Wernher von Braun observed during the opening session of the convention. "We are moving in that direction," said Dr. von Braun, Director of the Development Operations Division of the Army's Ballistic Missile Agency, "but unfortunately we still cannot claim parity, much less superiority."

These are the steps in the Soviet program that he described:

1. Earth satellites of such lifetime as to be practically permanent orbiters.
2. Recoverable satellites.
3. Manned earth satellites.
4. Rocket flights to the moon and other celestial bodies.
5. Satellites of very high apogee orbits.
6. Interplanetary space stations that could support a considerable number of people over extended periods of time.
7. Manned flights to Venus and Mars.

If the United States does not match this Communist space program, he stated, we may find ourselves "surrounded by several planets flying the hammer and sickle flag." Dr. von Braun said, "we can muster the necessary resources for a comparable plan only if the people themselves want it, support it, and are ready to make the necessary sacrifice."

He also described some of the peaceful possibilities of space travel. A small fleet of satellites, he said, could handle the entire mail volume of the world. Other possibilities include world-wide television and radio



Dr. Wernher von Braun, Director of the Development Operations Division of the Army Ballistic Missile Agency.

"... we may ... be surrounded by several planets flying the hammer and sickle flag."

—For more facts, circle No. 246

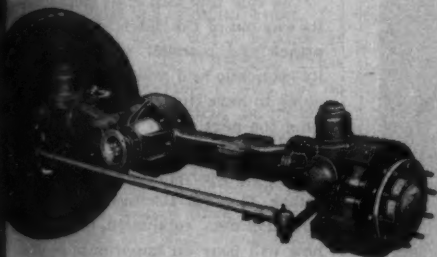
to build... for your specific job

here's how MACK
custom assembles
the truck to fit
your job

And only Mack offers quality features like these—

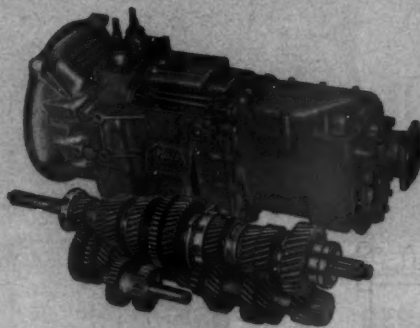
THE STRENGTH OF MACK-BUILT FRONT AXLES

Drop-forged I-beam front axles are made super strong for trouble-free service. Extensive use of heat-treated for crucial parts means minimum maintenance. And an exclusive front-drive axle for all-wheel-drive trucks provides the greatest ground clearance and strength of any made—all parts fully enclosed.



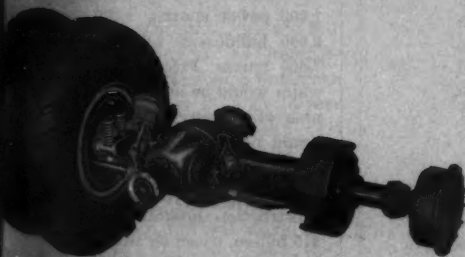
THE LONG LIFE OF MACK-BUILT TRANSMISSIONS

Service records prove that Mack transmissions—like this 20-speed Quadruplex—stand up to heavy-duty hauling far longer and need less attention than any others—thanks to the use of the finest gear metals known... to painstaking precision manufacture... and to exclusive Tetrapoid gear design that gives maximum strength, longer life and smoother action. Five- to twenty-speed units, each with ideal ratio steps.



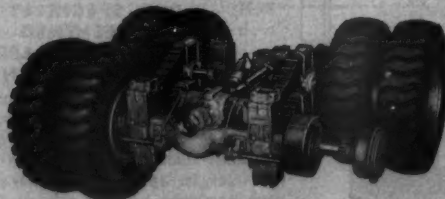
THE DURABILITY OF MACK-BUILT 2-WHEEL REAR AXLES

Two-wheel, rear-axle assemblies have an unmatched reputation for service under strenuous conditions. Dual Reduction, gear-type differential and Mack's famous planetary reduction at the wheel hubs (Planidrive) provide the distribution of power vital to top truck performance.



THE TRACTION OF MACK-BUILT BALANCED BOGIES

Macks perform where other trucks bog down—in mud, loose gravel or sand—thanks to Mack's exclusive Balanced Bogie with Power Divider. It's a 4-wheel-drive, tandem rear-axle assembly with an inter-axle differential that directs the most power to the wheels having greater traction. Planidrive final reduction in all four hubs eliminates the need for bulky carriers, differentials or axle shafts. Clearance is increased, weight is reduced, maintenance is fast and simple.



MACK first name for **TRUCKS**

Mack Trucks, Inc., Plainfield, New Jersey • In Canada: Mack Trucks of Canada, Ltd.

GATE MATERIALS HAULING... CONCRETE, DRY-MIX AND ASPHALT HAULING



Fred W. Heidenfels, Jr., 1958 president of the AGC.

"... the outlook is for 6 per cent increase in total construction volume in 1959 ... reaching \$72 billion."

(Continued from preceding page)

relay and exact weather forecasting. "The possibilities are more limited than the human imagination," he said, "if we can proceed in peace and without the menacing possibility of employing space technology for aggressive ends."

Another address that highlighted the opening convention session was that made by New York labor columnist Victor Riesel, who was blinded by an acid-throwing hoodlum in 1954. He told the delegates that a three-pronged, bipartisan government move against gangsterism in labor and industry, that has recently developed "spontaneously," will reach a climax during this year. He said the attack on criminal elements in unions and in management was coming from three different elements of government: the Senate, the Administration, and the courts.

Riesel said that the McClellan Rackets Investigating Committee would shortly begin a new series of hearings directed at exposing the criminal element that has invaded both the labor movement and industry. He also pointed out that these hearings would be particularly concerned with the construction industry, which has suffered from many violent incidents, including sabotage of equipment and property at job sites, and intimidation of workers.

The labor reform issue, which Riesel said will probably fail to be passed by Congress this year, would move over into the election year of 1960 and become an important domestic issue in the Presidential campaign.

Government speakers

The side that can most quickly dig its way out of the debris of the initial attack and marshal what is left of its economic and military strength is going to have the best chance of winning the next war, said Maj. Gen. R. C. Itschner, Chief of Engineers, U. S. Army. In recovery from the initial attack, General Itschner said, "construction men, equipment, and know-how will bear an importance to this effort second only to the armed forces."

He said that if a city should be hit by a 10-megaton nuclear surface burst, it would take 75,000 men nearly a month just to decontaminate the area to permit rescue and rehabilitation work to proceed. Street clearing, he estimated, would require 1,200 power shovels, 1,200 draglines, 2,000 bulldozers, 1,000 trailers, and 7,000 trucks. Five billion gallons of water would be needed, he said, in an area where power and water facilities would have been destroyed.

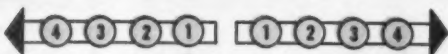
The U. S. Army Corps of Engineers, he stated, has been carrying on a construction program totaling some \$15 billion, based on strategic aircraft as the major deterrent to war. But, he said, technological progress is rapidly making the long-range bomber obsolete, and a new military construction program based on the long-range missile must be commenced.

only the

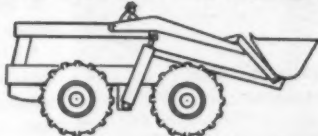
HYDRA-DRIVES BDB

OFFERS ALL THESE MAJOR ADVANTAGES

IN FULL-POWER SHIFT TRANSMISSIONS for equipment from 60 to 175 h.p.



4 speeds forward and reverse. All power shifted! Provides maximum horsepower to load under all load conditions.

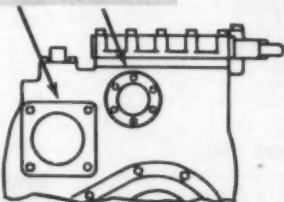


2. Integral design. Torque converter, transmission, oil passages, valving and oil sump are in one compact housing—7½" shorter than comparable models.

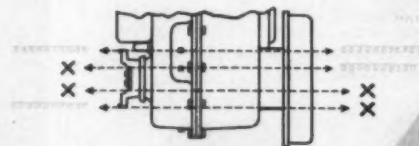


4/5 ENGINE SPEED

3. Dual reduced speed pump drives. Pumps can be driven at engine speed or 4/5 engine speed for longer life and increased horsepower to pump load. Single pump drive is also available.



4. Full disconnect provides four combinations of split drive ... from torque on both shafts, to both shafts in disconnect.



SPECIALY DESIGNED FOR SMALLER INSTALLATIONS

Rockwell-Standard's new model Hydra-Drives Full Power Shift Transmission is now available in sizes especially designed for smaller installations, such as front end loaders, fork trucks, scrapers, crane carriers, rubber tire tractors and military vehicles.

In addition, the Hydra-Drives BDB offers easier servicing and maintenance. There are fewer moving parts and bearings. The simple, rugged countershaft design and spur gears simplify maintenance.



For more facts, use Request Card at page 18 and circle No. 247

Gen. Itschner said he could not predict the ultimate size of the missile construction program, but he declared that the Air Force expects the Corps of Engineers to place under contract about \$480 million for missiles this year, while the Army's missile construction program is expected to total \$119 million.

Maj. Gen. A. M. Minton, director of installations for the Air Force, said that during 1958 the Air Force has moved from the construction of research and test facilities to the construction of operational ballistic missile sites in the United States and Great Britain.

Gen. Minton said that in the future the Air Force "must look towards the problems of construction in the space age and those generated by the use of highly corrosive exotic fuels and nuclear power."

Federal Highway Administrator Bertram D. Tallamy told the Highway Construction session that a serious cutback in the interstate highway program can be expected in 1961 unless Congress acts to provide additional financing.

While noting that President Eisenhower has recommended an increase of 1½ cents a gallon in the federal gasoline tax to keep the highway program at its authorized level, Tallamy did not forecast what action Congress will take on this recommendation.

"The immediate bottleneck," he added, "is the provision of sufficient funds to keep the program in pace with the authorizations which were set forth in the Highway Act of 1956." Tallamy predicted that Congress will very soon "come to grips" with the financing problems of the highway program.

The highway administrator reported that there was a balance of \$863 million in the Highway Trust Fund as of December 1, 1958, but he said this balance will be reduced during the remainder of this year and during the 1960 fiscal year, since expenditures are estimated to exceed revenue in each of these years.

Tallamy said that on January 1, the active federal-aid program for the entire United States totaled about \$8.244 billion. This includes projects still in the planning stage as well as actual construction. A year ago, the program totaled about \$7.083 billion. Actual federal-aid construction under way as of January 1 was \$6.197 billion, representing a 49 per cent increase over 1958.

"Now," he continued, "we are into actual production on an unprecedented scale and at a pace which can be maintained over a 13 to 16-year period."

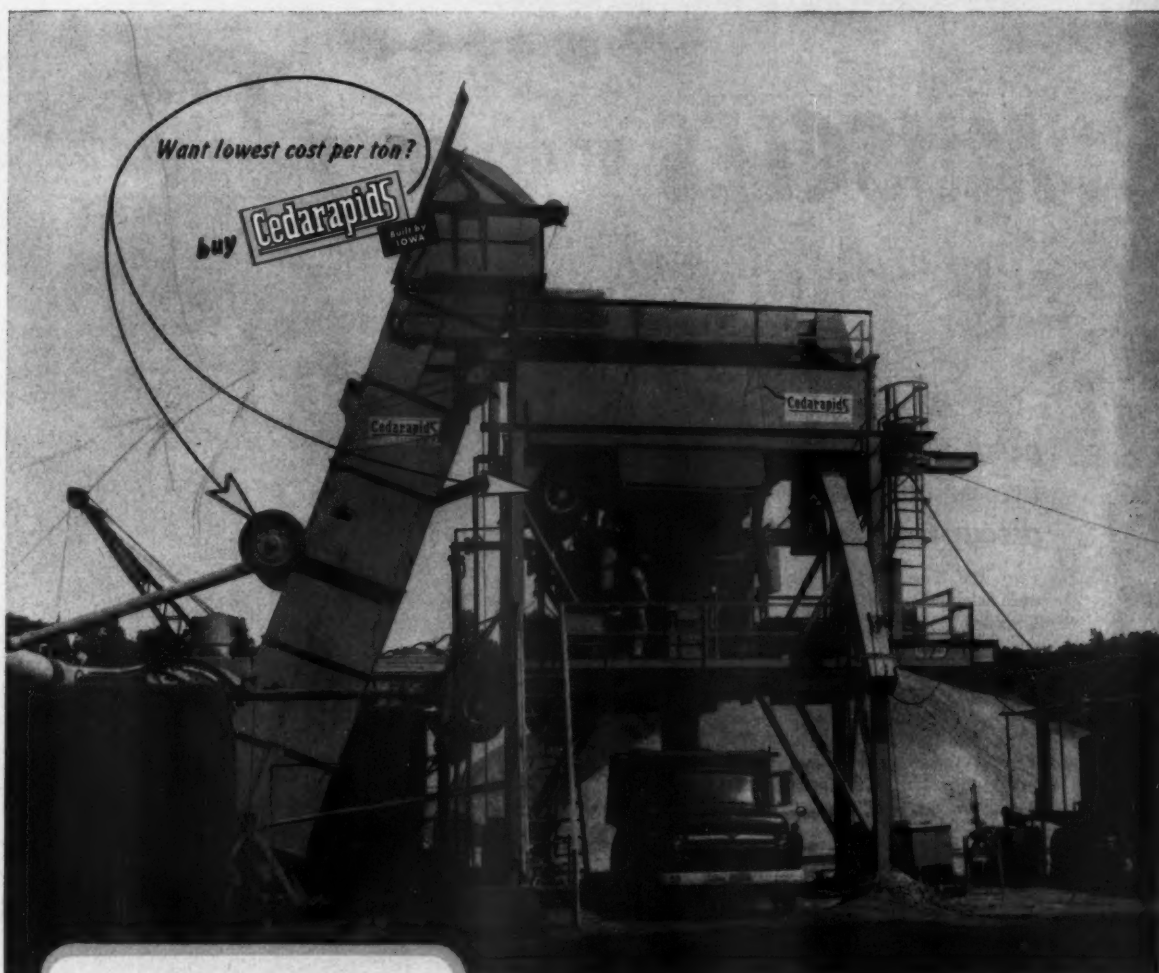
The progress up to now has been somewhat better than anticipated, he said. Since July 1, 1956, a total of 1,046 interstate projects have been completed at a total cost of \$9.44 billion. These projects provided for the improvement of 3,159 miles of the Interstate System and construction of 2,067 structures.

He reported that work on the ABC

(Continued on next page)

For more facts, circle No. 248→

M. Clare Miller, left, chairman of the AASHO-AGC Joint Cooperative Committee, greets Senator Albert Gore (D., Tenn.), former chairman of the Senate Subcommittee on Roads, as Max C. Harrison, retiring chairman of the AGC Highway Construction Division, looks on.



How one contractor dismantled G60 Plant, moved 100 miles, set up and started producing in 3½ days!

Schultz & Lindsay Construction Company, Fargo, North Dakota, have moved their Cedarapids G60 Batch-type plant 12 times in 3 years!

They can dismantle the plant and get it ready for transport in 12 hours. They can set up the mixing unit, drier, dust collector, cold-feed equipment, yard piping, steam generator and wiring in 3 days. Their record move required just 3½ days to tear down, transport 100 miles, set up, and start operating! They never have a crane on the job.

Such fast and frequent moves are made possible by Cedarapids portable design and the exclusive self-erecting mechanism, not only on Model G60 plants, but also on G50 and G40 Models.

100% Portable — Self-Erecting CEDARAPIDS BITUMINOUS MIXING PLANTS Reduce Profitless Between-Job Delays

Count what these portability benefits of Cedarapids batch-type Model G plants mean to you! Each sectionalized unit is carefully "packaged." Nothing, except the delicate scales, has to be removed or changed for transporting. In dismantling, each section is ready to roll the minute the built-in running gear hits the ground. At the new site, the *only* available truly self-erecting mechanism quickly raises each section into place. No crane is necessary. The "packaged" sections fit together perfectly. You're back in operation almost before you know it, turning out exact-specification material. There are no costly relocation delays to nibble away at your season's per-ton profit. Add in the many other Cedarapids Bituminous Mixing Plant benefits in the complete line of both portable and stationary batch-type plants or continuous-mix plants. Ask your Cedarapids Dealer to prove that no other make can match them for profitable production.

IOWA MANUFACTURING CO. • Cedar Rapids, Iowa, U.S.A.



Rear Adm. E. J. Peltier, Chief, Bureau of Yards and Docks.

"... we are putting greater emphasis on cost consciousness... we want to concentrate on new and cheaper materials... and find a way to do a job better and cheaper."

For more facts on insert, circle No. 239.

(Continued from preceding page)

systems (primary and secondary highways and their urban extensions) is also progressing rapidly. Since July 1, 1956, he said, construction has been completed on 60,112 miles of these roads at a total cost of \$3.6 billion, of which \$1.8 billion represented federal funds.

Other government speakers included Tennessee's Sen. Albert Gore, former chairman of the Senate Subcommittee on Public Roads. He expressed opposition to the Administration's proposal for increasing the federal gasoline tax to finance the interstate highway program and called for a thorough re-examination of the federal tax structure to eliminate loopholes, inequities, and favoritism in the tax laws.

Rear Adm. E. J. Peltier, Chief of the Navy's Bureau of Yards and Docks, said that the high cost of new facilities for the "nuclear Navy" that is coming into being has generated a new atmosphere of cost-consciousness in the Navy's construction department.

Rep. George H. Fallon of Maryland, Chairman of the House Subcommittee on Roads, warned that unless legislative action is taken "there will be no money at all" to be apportioned for construction of the Interstate System in the fiscal year beginning July 1, 1960. It may be necessary, he added, to cut as much as \$200 million from the regular ABC federal-aid highway apportionment for this year unless remedial legislation is enacted during the current session of Congress.

Resolutions

Of the resolutions heard, voted, and passed by the convention, one urges the federal government and the 86th Congress to enact legislation to provide funds necessary to permit the continued orderly expansion of the ABC system, and to permit completion of the interstate highway system within the 16-year construction period contemplated by the Federal-Aid Highway Act of 1956. Another opposes any further diversion of funds from the Highway Trust Fund for purposes other than the construction of highways and administrative expenses of the Bureau of Public Roads. A third urges the Congress to enact legislation extending the Federal Airport Act on a continuing basis.

Still another commends the action taken by several major cement producers giving a firm price for cement in 1959 at no increase over 1958, and urges similar action by all industry. A resolution was also passed to increase the organization's apprenticeship activities in local programs in order to prevent an acute skilled-manpower shortage. A final resolution urged revision of the Tables of Useful Lines of Depreciable Property.

MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96" I. D. reinforced concrete tile 88' under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.



JACKING PROCEDURE—A service pit 28' deep by 22' wide by 40' long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

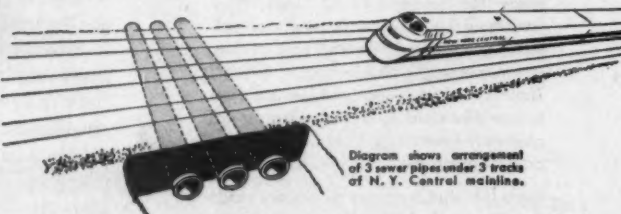
EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48" ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.



Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ½ of the 48" ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.



If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

7415 Walker St. • Minneapolis 16, Minnesota



For more facts, use Request Card at page 18 and circle No. 249

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PROJECT PAYDIRT *pays off for you again*

BIG NEW CAT No. 14 TURBOCHARGED MOTOR GRADER

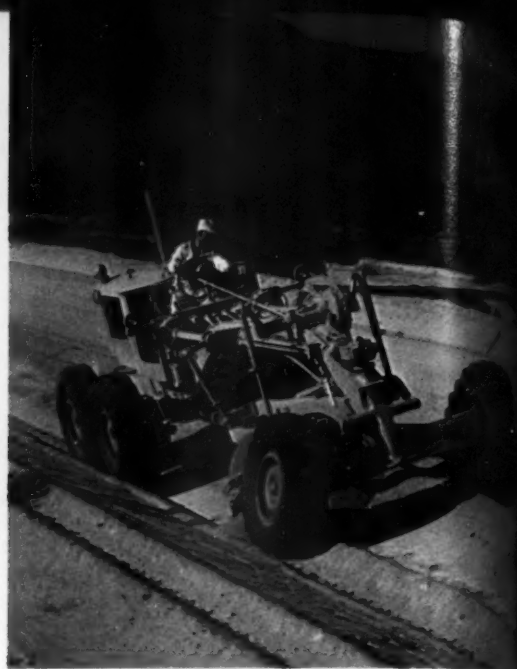
Most versatile big grader ever developed, recommended
for everything from the roughest jobs to the finest grading!



PROJECT PAYDIRT! Caterpillar's multi-
million-dollar research program—to meet the continuing
challenge of the greatest construction era in history with the
highest production earthmoving machines ever developed.



MAINTAINING HAUL ROADS, the No. 14 pays off with high capacity and high availability on the toughest construction jobs. It has the power to handle heavy material at speeds that won't interfere with hauling units!



DITCHING AND SPREADING, the No. 14 pays off with high production in the most demanding work. When working in fill areas, you can also use it to advantage spreading subbase and fill!

BIG, VERSATILE No. 14 PAYS OFF WITH HIGH

In the new No. 14 Series B, Caterpillar brings you the most versatile motor grader ever developed in the "big machine" field. It is the one big grader that delivers high capacity both on the roughest and finest grading work. Another major achievement in Caterpillar's "Project Paydirt," it answers the contractor's need for a unit that comes through dependably with higher, faster, lower-cost production on today's big jobs.

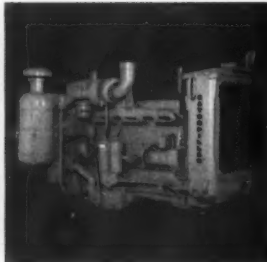
The first and only Turbocharged Motor Grader, the No. 14 packs 150 HP (rated at sea level). Weighs in the 30,000 lb. class. Operates at the highest practical

working speeds with either a 12-ft. or 14-ft. moldboard. Has a turning radius of 36 ft. And with all this power and heft, it has the extra strength to deliver the high availability for which Cat Motor Graders are famous.

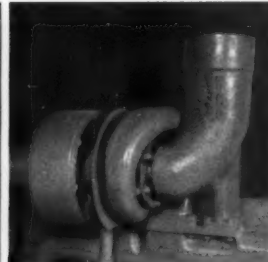
In the new No. 14 you'll find the latest engineering advances developed by Caterpillar research. Example: new design permits increased clearance between moldboard and circle for greater loads. You'll also find exclusive time-tested Caterpillar developments. Example: the oil clutch. All of these many features, some of which are listed here, pay off in this one fact:



NEW DRY TYPE AIR CLEANER. Most efficient air cleaner ever developed. Removes 99.8% of all dirt from intake air during every service hour. Can be serviced in five minutes. Cuts maintenance time (by as much as 70%) and costs. Extends engine life.



TURBOCHARGED CAT ENGINE. First and only Turbocharged engine ever offered in a motor grader. Of job-proven design, it is ruggedly built for a long life under severe working conditions. Like all Caterpillar Engines, its high torque rise (18%) pays off on the job.



NEW TURBOCHARGER. Close-up of the Cat Turbocharger, which greatly increases over-all engine performance. Turbocharger utilizes waste energy from engine exhaust to step up efficiency and economy. Fuel system permits use of economy-type fuels without fouling.



IMPROVED MECHANICAL BLADE CONTROLS. Standard on the No. 14. Improved design increases speed of response 25%. Controls provide precise blade adjustment, reduce kickback, ease engagement. "Anti-creep" lock makes blade stay put under load.

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You can use the No. 14 profitably on many different applications such as:

- power applications like heavy grading, heavy ditching, rough grading and bank sloping.
- control applications like light spreading, surface maintenance, fine grading and light blading.

As a result, you don't have to pick "spots" to make the No. 14 pay off for you. This all-purpose grader will earn its keep on every application with high capacity and low operating cost. But see for yourself. Get the complete facts on the big new No. 14 from your

BLADE CONTROL. Optional on the No. 14, the speed of the blade can be controlled by a "kickback" control. This lock makes the blade maintain a constant slope within 1/8 in. in 10 ft.

AMPLE THROAT CLEARANCE. New design permits increased clearance between moldboard and circle for greater loads. Extra strength is built into frame, drawbar and circle to match engine power, absorb punishment of rough work and assure accurate blading in tough going.

FINISHING. the No. 14 pays off with maximum efficiency on fine or rough work. With the new transistorized Preco Automatic Blade Control, it controls blade slope within 1/8 in. in 10 ft. — cuts fine grading time as much as 50%.

Caterpillar Dealer. Go over it on his lot—watch it work on your job. Say when and where—he'll demonstrate!

NEW TURBOCHARGED No. 14

Engine HP (rated at sea level)	150
Weight	29,280 lb.
Blade Standard	12 ft.
Optional	14 ft.
Tires (w/10-in. rims)	
All around	14.00-24 (10 ply rating)
Travel speeds: 6 forward, 2 reverse	2.6 to 21.6 MPH

14.00-24 TUBELESS TIRES. All way around—all tires mounted on 10-in.-wide rims to stiffen tire side-walls and reduce tire "roll." Large tires on front end improve machine stability.

POWER STEERING AND POWER BRAKES. Both provide the fast, positive response that gives an operator complete confidence to tackle tough jobs. Ease of operation helps him maintain high production anywhere.

UNEQUALLED VISIBILITY. Dash-mounted lift gears and low frame design provide clear visibility. An operator, while seated, has an unobstructed view of critical areas at the front wheels, toe of the blade and circle. Convenient in-seat starting is another No. 14 plus.

EXCLUSIVE OIL CLUTCH. Most advanced clutch design in the industry. Provides up to 2,000 hours' service without adjustment, the equivalent of about 12 months of "adjustment free" operation. Virtually eliminates down time for clutch repair.



How Project Paydirt pays off across the board
for you in the only complete earthmoving line



In the No. 14, you have just seen one of many achievements of Caterpillar's multi-million-dollar research program. This program is responsible not only for developing new machines like the No. 14, but also for improvements in every current model—Tractors, Scrapers, Traxcavators, Motor Graders and other earthmovers.

That's why, when you invest in a Caterpillar machine, you can count on it for unmatched performance in its class. It's a modern, heavy-duty unit that pays off where the chips are down—on the job. Here's the line-up at your Caterpillar Dealer to help you to more profitable earthmoving. Besides the No. 14, it includes the No. 12 and No. 112 Motor Graders and the following:



FIVE TRACK-TYPE TRACTORS: Spearheaded by the "take-charge" D9 (320 HP), there's the new D8 (225 HP), D7 (128 HP), D6 (93 HP) and D4 (63 HP). (All are flywheel ratings.) Plus a complete selection of 'dozers (including the No. 7G Bulldozer), rippers, tool bars and tool bar equipment.



THREE TRAXCAVATORS: These front-end loaders provide a range of capacities that meet every purpose—No. 977 (2¼ cu. yd. bucket); No. 955 (1½ cu. yd.) and No. 933 (1 cu. yd.). All can be equipped with the exclusive Side Dump Bucket, or other quick-change attachments—special buckets, teeth, bulldozers or forks.



THREE WHEEL-TYPE TRACTORS: The two-wheeled DW21 (345 HP, max.), the four-wheeled DW20 (345 HP, max.) and DW15 (200 HP, max.) team with matching LOWBOWL Scrapers for high production: the No. 470 (19.5 cu. yd. struck), No. 482 (24 cu. yd. struck), No. 456 (19.5 cu. yd. struck) and No. 428 (13 cu. yd. struck) respectively. Four Cat 4-wheel Scrapers are also available: Nos. 491 (27 cu. yd.), 463 (18 cu. yd.), 435 (13 cu. yd.), and 60 (7 cu. yd.), all struck capacity. And Athey Wagons couple with Cat wheel-type Tractors for rear or bottom dumping.

Your Caterpillar Dealer is headquarters for the most productive earthmoving equipment line in the field. He's a source of reliable information and service. See him today!

Caterpillar Tractor Co., Peoria, Illinois; San Francisco, California, U. S. A.

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Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment

**BORN OF RESEARCH
PROVED IN THE FIELD**

published by the Internal Revenue Service and designated Bulletin "F," which has not been revised since the 1943 edition.

New officers elected

James W. Cawdrey of Seattle, Wash., was installed as 1959 president of the AGC at the closing convention session. John A. Volpe of Malden, Mass., was sworn in as vice president for 1959.

Cawdrey served as vice president of the association in 1958 and in accordance with custom was elevated to the top AGC post. He succeeds Fred W. Heldenfels, Jr., highway contractor of Corpus Christi, Texas.

Cawdrey is a member of the building firm of Cawdrey & Vemo, which has constructed many buildings in the Seattle area. He has been active in AGC affairs, both on the national and local levels, for many years. He was president of the Seattle Chapter of AGC in 1949 and was chairman of the Building Contractors Division of AGC in 1955. He also served as a national director and on several AGC committees.

Volpe, besides being active in AGC affairs, has been prominent in public life. He was selected by President Eisenhower for the post of Federal Highway Administrator when that office was first created by Congress. He also served a term as Massachusetts Commissioner of Public Works and was president of the Greater Boston Chamber of Commerce last year. Volpe is a member of the Executive Committee of AGC and has served on various committees of the association.

THE END

HRB reports on lime soil stabilization

"Lime and Lime-Flyash Soil Stabilization," Bulletin 193, has been released by the Highway Research Board. The 47-page booklet contains reports on: durability of soil-lime-flyash mixes compacted above standard Proctor density; structural properties of lime-flyash-aggregate compositions; reactivity of four types of flyash with lime; lime-stabilized test sections on Route 51, Perry County, Mo.; and stabilization of expansive clay with hydrated lime and portland cement. Charts and photographs supplement the text.

The bulletin may be purchased for \$1 from HRB, 2101 Constitution Ave., Washington 25, D. C.

Engineers open office

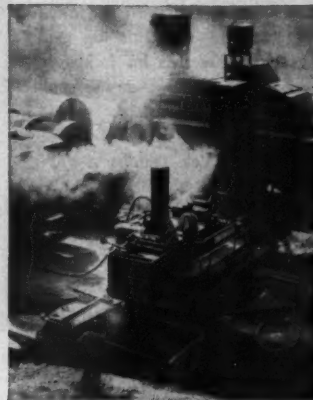
Spencer, White & Prentis, Inc., contractors and engineers of New York City, has opened a district office in Pittsburgh, Pa. Roger Bethel, formerly with the Detroit and New York offices, is now manager of the new branch.

For more facts, circle No. 251→

Fred W. Heldenfels, Jr., 1958 president, hands over the gavel to incoming president James W. Cawdrey.



Wants dependable source for Asphalt --buys from STANDARD OIL



Sarrington Construction keeps on schedule, gets other benefits from using STANDARD Asphalt

When you put down 8.3 miles of Asphalt in nine working days, your materials have to be there when they're needed. Sarrington Construction had at least two good things working for them when they contracted to pave a section of Wisconsin State Highway 49, southeast of Ripon. They had (1) a dependable source of supply for Asphalt and (2) on-the-spot assistance from an experienced Asphalt man. They had contracted for STANDARD Asphalt.

Deliveries of 85-100 grade STANDARD Asphalt came to Sarrington's continuous mix plant on schedule from Standard's Whiting Refinery 195 miles away. This is one of four strategically located Standard Oil refineries Sar-

rington could draw upon for deliveries. From Milwaukee came Frank Cocking, an experienced Asphalt salesman with 25 years' service with Standard.

Delivery on schedule, well located Asphalt supply sources, technical service by experienced men, attention to contracts when Asphalt is in short supply as well as when it is plentiful. This is what Sarrington Construction gets by buying from Standard Oil. You can get this sort of service, too. Call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write STANDARD Oil Company (Indiana), 910 South Michigan Ave., Chicago 30, Illinois.

You expect more from  and you get it!

Having someone who knows Asphalt construction on hand when you're putting down the road can be a help. Frank Cocking discusses how job is going with David Gasser, Sarrington Construction owner-partner. Here contractor is laying three inch pavement—1½ inch binder, 1½ inch wearing surface—on 22 ft. width. David Gasser directs firm's highway paving work. Partner John Scott supervises rest of Sarrington's operations throughout Wisconsin, applying STANDARD Asphalt in Sealcoat work.





Architect-contractor relations defined

THE PROBLEM: Two parties may not be made joint defendants in a suit unless they have a common legal interest or liability. Plaintiff, a building owner, sued a building contractor and a firm of architects for damages, alleging that the contractor failed to follow plans and specifications prepared for plaintiff by the architects, and that the architects, in a supervisory capacity, failed to require the contractor to comply with those documents. Did the trial judge properly dismiss the suit on the ground that there was an improper joinder of defendants—that the contractor and the architects should have been separately sued?

THE ANSWER: Yes. (*Fuchs v. Parsons Construction Co.*, 88 N. W. 2d 648, decided by the Nebraska Supreme Court.)

Owner-architect and owner-contractor relationships are governed by different rules of law. Ordinarily, the architect is an agent of the owner, while the contractor is an "independent" contractor. The latter is responsible to the owner for performing the contract according to the plans and specifications. Here there was no common interest between the architects and the contractor. Their interests were adverse. In short, the claims against the defendants were legally distinct, although they grew out of a common construction project.

Partial contract award effectively withdrawn

THE PROBLEM: The government called for bids on Air Force base construction. There were five alternative schedules and four items under each schedule, and a condition that items 1-3 would be awarded on one contract with right to award item 4 reserved. Plaintiff was low bidder on all five alternative schedules, subject to acceptance within 60 days after opening of the bids. The government notified plaintiff that its bid on Schedule A items 2 and 3 and alternate item 4 was accepted, and that right was reserved for 60 days from the bid date to award item 1 on Schedule A, C, or E. After some fruitless negotiation, plaintiff sent a letter accepting the partial award. But before receiving the letter, the government telegraphed withdrawal of the partial award. Did a contract binding the government result?

THE ANSWER: No. (*Pacific Alaska Contractors, Inc., v. United States*, 157 Fed. 2d 844, decided by the United States Court of Claims.)

Suit by plaintiff for damages for breach of contract was dismissed. But the court recognized that, if the letter of acceptance had been received before the telegram was sent, the government would have been bound by the letter of acceptance.

Competitive bidding

THE PROBLEM: The General Municipal Law of New York requires the letting of contracts involving expenditure of \$1,000 or more on advertised call for bids. Without calling for bids, town authorities within about ten months bought from the same company road-repair supplies aggregating \$11,900.50 under 54 separate purchases, each of which involved less than \$1,000. Were the purchases legal?

THE ANSWER: Yes. (*Rason Asphalt,*

Inc., v. Town of Oyster Bay, 175 N. Y. Supp. 2d 302, decided by the New York Supreme Court, Appellate Division, Second Department.)

Apparently, there was no attempt to circumvent the statute by splitting into two or more transactions what really involved only one.

Time limits for suing

THE PROBLEM: In most states, statutes permit lapse of a longer time for suing to collect pay or damages under a written contract than under

an oral agreement. In *Utah*, suit based on a written agreement may be started within six years, and suit based on an oral agreement must be started within four years.

A construction contract specified a precise payment schedule and a definite date for completion. There was no clause in the contract, entitling the contractor to payment by the owner, covering depreciation of the contractor's equipment, capital expenditure, or other items not covered by the written contract. Within six years, but after four



ELECTRIC STACKER TAKES
OVER ALL LOG HANDLING
JOBS IN MILLYARD
REPLACES FIVE MEN...
THREE MACHINES

Millyard costs are being sharply reduced by giant fork truck built by R. G. LeTourneau. The versatile Electric Log Stacker. 25- to 30-ton truck loads are unloaded in a single bid.

Powered by Electric Wheels, the Stacker swiftly across muddy, rutted millyards to keep moving—decking the logs, sorting them, for the mill. With its drive and all its work functions



TRANSPORTER self loads and unloads pipe in West Texas desert. All-wheel Electric Drive and huge soft tires deliver tremendous traction and flotation to carry 30-ton loads thru soft sand.



CRASH PUSHERS clear 200-ton damaged aircraft from military runway in minutes. Infinite gradations in power control of Electric Wheels gives imperceptibly smooth application of power.



MOBILE CRANE. All functions independently powered by electric gears. Electric Wheels, boom swing, hoist, are all DC powered. Regenerative braking holds all functions at exact selected speeds.

The court recognized that under the terms of the written contract there might be a change in plans and specifications and extra work might be ordered. The contractor's rights in those respects would be enforceable

THE PROBLEM: A municipal sewer-construction contract provided that the "contractor shall ascertain location of all gas, water, telephone or electric, or other public or private utilities and structures, and protect same."

In addition: "Existing surface, overhead, or subsurface structures damaged or destroyed by reason of the contractor's operations shall be promptly repaired or replaced in a satisfactory manner at the cost and expense of the contractor. Should it be necessary during the progress of the work to move or relocate existing surface, overhead, or subsurface structures, the contractor shall cause the same to be done at his own cost and expense, unless otherwise herein provided for. The cost of this work shall be included in the prices bid

THE ANSWER: Yes. (West Virginia Water Service Co. v. Cunningham, 98 S. E. 2d 891, decided by the West Virginia Supreme Court of Appeals.)

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

The Electric Wheel is just one part of this proven system of diesel-electric power and control. Steering, braking, other work functions, are all electric powered by thoroughly tested components, *all of which we make ourselves*. This assures dependable performance and allows new freedom to design *machines to do the job you want done.*

A number of new earthmoving machines with all-wheel electric drive — one type shown below — have now been built for the BIG jobs in construction and mining. For information please write 2395 South MacArthur, Longview, Texas.



F-102

reduced by 25 to 50 percent. The new machine is electrically powered at the point of action—and controlled by simple fingertip switches—this agile and its single operator have replaced five and three machines in the average millyard. Histories showing the reduction in operating costs are available on request. Similar increased productivity is now available in earthmoving and mining contractors, too.



DRILLING PLATFORM raises and lowers itself 1 ft. per minute allowing re-location in industry. All components of leg driving mechanism built entirely by R. G. LeTourneau, Inc.



DC MOTORS for Electric Drive machines are designed and built exclusively in our own plants. They are an integral part of Electric Power and Control System developed by R. G. LeTourneau, Inc.



EARTHMOVING EQUIPMENT. K-100-Ton Tractor is rubber-tired goliath for general use. 600 hp diesel-electric generating system drives Electric Wheels. Write for information on this new equipment.

For more facts, use Request Card at page 18 and circle No. 252

Licensing engineers

Applicant had been granted a license in the District of Columbia without examination or appearance before the board there—evidently because of many years of engineering experience with Western Union, the Navy, the U. S. Army Corps of Engineers, and because he had written books on engineering. But he had never taken an examination and had rejected an opportunity to take one before the Virginia board. He had been registered by the National Bureau of Engineer Registration. On the strength of these registrations, he was registered in South Carolina and Georgia. Was he entitled to compel the Virginia board to register him?

THE ANSWER: No. (Spindel v. Jamison, 103 S. E. 2d 205, decided by the Virginia Supreme Court of Appeals.)

The court summarily dismissed a

contention by applicant's lawyers that the Virginia registration law is unconstitutional. Because he claimed benefits under the law, he was debarred from attacking its validity. He did not assert a right to practice engineering without registration.

The court recognized that the board must give anyone otherwise possessing necessary qualifications an examination to determine his ability. But the court rejected an interpretation that would compel issuance of a certificate because applicant had been registered in one or more other jurisdictions, if he had never been officially examined as to his qualifi-

cations under a registration law. The court said that the law should not give persons coming into Virginia without ever having been examined anywhere a privilege denied Virginians, who are required to submit to examination.

Gravel-pit lease

THE PROBLEM: A five-year lease of a sand and gravel pit called for payment of a tonnage royalty on material removed. It also provided that on removal of the lessees' equipment, the lessees should "place all waste stone on the west dike". (The dike served to protect the lessors' land from floods from an adjacent river.) The lessees failed to comply with this condition. Were the lessors entitled to

collect damages, measured by the cost of placing the waste stone on the dike, in view of the fact that royalties under the lease covering the material would have amounted to less than the cost of placing the material on the dike?

THE ANSWER: No. (Irving v. Ort, 146 N. E. 2d 107, decided by the Appellate Court of Indiana.)

The court reasoned that the lessees could sell the waste stone and pay the agreed royalty—which would have amounted to about \$2,000—or could place the stone on the dike. Lessees' failure to do either did not justify an award of damages amounting to about ten times that amount. The court noted that there was no proof that the lessors intended to place the stone on the dike and that the \$22,-

700 damages, erroneously awarded in a lower court, exceeded the value of the entire tract of land owned by the lessors. They were not entitled to be put in a better financial position than they would have been had the lessees not broken their contract.

Low bidder loses suit

THE PROBLEM: A general contracting firm, in preparing a bid on a college gymnasium and swimming pool, secured through its estimator bids for a plumbing subcontract. Plaintiff claimed that its bid for that work was the lowest, but the general contractors on being awarded the prime contract refused to award the plumbing to plaintiff. Was plaintiff entitled to damages?

THE ANSWER: No. (Forgeron v. Hansen, 308 Pac. 2d 406, decided by the California District Court of Appeal, Fourth District.)

The court said the plaintiff failed to prove that the estimator agreed, on behalf of the general contractor, that they would let the subcontract to plaintiff; or that the estimator was authorized to so agree, even if he did; and that plaintiff did not prove that its bid was actually the lowest. The mere fact that a contractor's employee or agent may be authorized to receive bids does not imply authority to agree that, if the contractor gets a prospective prime contract, he will give the bidder a subcontract.

The court intimated that even if the general contractors were otherwise bound by the estimator's promise, there was no binding agreement to award the subcontract because the terms had not been agreed upon.

Construction regulations

THE PROBLEM: If proposed construction will equal or excel standards called for by municipal regulations, can the municipal authority lawfully refuse to issue a construction permit because the construction does not specifically comply with the regulations?

THE ANSWER: No. (Johnson Construction Co. v. Township of White Lake, 88 N. W. 2d 426, decided by the Michigan Supreme Court.)

The construction company was denied a permit by local authorities for the erection of 37 prefabricated houses, because a metal "Z" brace and a center partition at the joint of the rafters at the roof peak were to be substituted for ceiling joist or collar beams, and because 2x3 studding was to be substituted for 2x4. At the trial of a suit to compel issuance of a permit, two architects testified that the substituted features would provide durability equal to, if not greater than, that provided for by the regulations. This opinion was contradicted only by a local carpenter.

In okaying an order requiring that a permit be issued, the court recognized that the public welfare would not be promoted by requiring literal compliance with the particular municipal specifications. But, until the contrary is proved, such regulations are to be presumed to be valid.

CONTRACTORS AND ENGINEERS

(1) NEW FOLDING HOPPER

10' wide hopper will receive material from the largest trucks without spillage. Hopper capacity approximately double previous model's. Sides raise hydraulically to feed material into conveyor. When in raised position for transport, width is 8'.

(2) NEW GREATER POWER AND TRACTION

New .6 cylinder engine delivers 59 h.p. at 1800 rpm. Front wheels have been moved forward under hopper to increase its load capacity and shift more weight on rear drive wheels for increased traction.

(3) NEW 12' PAVING WIDTH

Extensions are now available to increase paving width to 12'. Quickly added or removed as required. Increased power to screed bar.

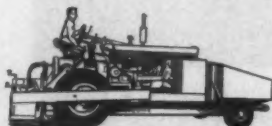


These important advancements, plus many other TRAC-PAVER features (See below) have kept TRAC-PAVER out front as the "World's Most Versatile Black-Top Paver" —

- Better Visibility — operator can see both front wheels and both sides of screed at all times.
- Better Maneuverability — Short turning radius, improved Power Steering, better traction on all types of base.
- Hydraulic Actuated Screed Bar — less maintenance because there are no chains or gears in drive.
- Easier, Speedier Transporting — over the road speed up to 18 mph under its own power. Rubber tire mounted.
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- Strip Paving Attachment — for widening roads or replacing pavement removed for installation or repair of utilities. Does smooth even job, paves any width from 30" to 12'.
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No matter what the job — roads, streets, parking lots, driveways, strip paving — TRAC-PAVER has proven its ability to do it quicker and better than any other paver of its size.

Write today for full information and name of nearest TRAC-PAVER distributor.



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TRAC-MACHINERY CORP., Dept. C, NUNDA, NEW YORK

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Convention Calendar

March 8-14 American Congress on Surveying and Mapping and American Society of Photogrammetry
Annual Meeting, Shoreham Hotel, Washington, D. C. C. E. Palmer, secretary-treasurer, ACSM-ASP, 1515 Massachusetts Ave. N. W., Washington 5, D. C.

March 9-10 Georgia Highway Conference
Conference, Architecture Auditorium, Georgia Institute of Technology, Atlanta, Ga. Director, Short Courses and Conferences, GHC, Georgia Institute of Technology, Atlanta 13, Ga.

March 10-20 Civil Engineering Conference
Conference, University of Florida, Gainesville, Fla. F. W. Gilcrease, CEC, Department of Civil Engineering, University of Florida, Gainesville, Fla.

March 11-14 American Concrete Pipe Association
Meeting, Palm Beach Biltmore, Palm Beach, Fla. Howard F. Peckworth, managing director, ACPA, 228 N. La Salle St., Chicago 1, Ill.

March 16-20 National Association of Corrosion Engineers
Fifteenth Annual Conference and Corrosion Show, Sherman Hotel, Chicago, Ill. T. J. Hull, executive secretary, NACE, 1081 M & M Bldg., Houston 2, Texas.

March 17-21 New York State Association of Highway Engineers
State Convention, Hotel McAlpin, New York City. George J. Marks, convention chairman, NYSAHE, State Office Bldg., Babylon, Long Island, N. Y.

March 18-20 Association of Highway Officials of North Atlantic States
Annual Convention, Traymore Hotel, Atlantic City, N. J. Kenneth D. Rice, executive secretary, AHONAS, 1035 Parkway Ave., Trenton, N. J.

March 18-20 Short Course for Superintendents and Operators of Water and Sewerage Systems
Twenty-second Annual Course, Louisiana State University, Baton Rouge, La. Fred H. Fenn, dean, College of Engineering, SC80WSS, Louisiana State University, Baton Rouge 3, La.

March 30-April 2 Purdue Road School
Forty-fifth Meeting, Memorial Union Bldg., Purdue University, West Lafayette, Ind. Dr. J. F. McLaughlin, PRS, Civil Engineering Bldg., Purdue University, Lafayette, Ind.

April 1-3 South Dakota Highway Short Course
Course, Union Bldg., South Dakota State College, Brookings, S. Dak. Emory E. Johnson, SDHSC, South Dakota State College, Brookings, S. Dak.

April 6-10 American Welding Society
Fortieth Annual Convention, Hotel Sherman, Welding Show, International Amphitheatre, Chicago, Ill. AWS, 33 W. 30th St., New York 18, N. Y.

April 7-9 Ohio Highway Engineering Conference
Conference, Ohio State University, Columbus, Ohio. Emmett H. Karrer, professor of highway engineering, OHEC, Brown Hall, Ohio State University, Columbus 10, Ohio.

April 13-17 Greater New York Safety Council
Twenty-ninth Annual Safety Convention and Exposition, Statler Hotel, New York, N. Y. Paul F. Stricker, executive vice president, GNYSC, 60 E. 42nd St., New York 17, N. Y.

April 16-17 American Institute of Steel Construction
Meeting, Boca Raton Club, Boca Raton, Fla. L. A. Post, executive vice president, AISC, 101 Park Ave., New York 12, N. Y.

April 21-24 High Speed Computer Conference
Conference, Pleasant Hall, Louisiana State University, Baton Rouge, La. B. B. Townsend, conference chairman, HSCC, Mathematics Department, Louisiana State University, Baton Rouge, La.

April 23-25 Texas Aggregate Association and Texas Ready Mixed Concrete Association
Fifth Joint Annual Conference, Sham-

rock Hilton Hotel, Houston, Texas. Ray L. Cain, executive secretary, TAA-TRMCA, 201 Perry Brooks Bldg., Austin, Texas.

May 1 Conference for Engineers
Sixth Annual Conference, Merahon Auditorium, Ohio State University, Columbus, Ohio. Marion L. Smith, associate dean, College of Engineering, 120 McPherson Lab, Ohio State University, Columbus 10, Ohio.

May 4-8 American Society of Civil Engineers
Convention, Hotel Cleveland, Cleveland, Ohio. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

May 6 The Moles
Annual Business Meeting and Dinner, The Biltmore Hotel, New York, N. Y. The Moles, The Biltmore Hotel, New York 36, N. Y.

May 13-15 National Rivers and Harbors Congress
Meeting, Mayflower Hotel, Washington, D. C. William H. Webb, executive

vice president, NRHC, 1028 Connecticut Ave. N. W., Washington 6, D. C.

May 18-19 Society of American Military Engineers
Thirty-ninth Annual Meeting, Mayflower Hotel and Naval Ordnance Laboratory, Washington, D. C. Col. F. H. Kohloss, executive secretary, SAME, 808 Mills Bldg., Washington 6, D. C.

May 25-26 Wire Reinforcement Institute
Meeting, The Greenbrier, White Sulphur Springs, W. Va. Frank B. Brown, managing director, WRI, 1049 National Press Bldg., Washington 4, D. C.

May 25-30 Concrete Reinforcing Steel Institute
Meeting, The Greenbrier, White Sulphur Springs, W. Va. H. C. Delsell, managing director, CRSI, 38 S. Dearborn St., Room 1625, Chicago 3, Ill.

The Arizona Highway Commission
awarded \$32,861,543 in road construction contracts in 1958.

Book on plastic design of steel frames

The application of plastic methods to design are emphasized in "Plastic Design of Steel Frames," by Lynn S. Beedle. In addition to presenting the simple plastic theory and the methods of plastic analysis, the book covers such secondary design considerations as the influence of shear force, axial force, and buckling.

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1 Plenty of earthmoving equipment was needed for the 50,000 to 60,000 yards of embankment placed per day for Swift Dam on upper Lewis River in Washington. The "Euclid" at right is placing filter material for the chimney zone; at left, two Southwest 50-ton rollers pulled by Allis-Chalmers tractors handle compaction in the embankment area.



2 A Manitowoc 4500 dragline with Hendrix bucket—several rigs loading out to some 70 haul units on the project—works a borrow pit supplying embankment material. "Euclid" bottom-dump is sideboarded to increase its capacity.



3 Several borrow pits were used for the various zones of the dam. A Bucyrus-Erie 54-B loads filter material to an end dump Euclid in this pit, where ground water level limits the depth to which the shovel can work.



4 In another borrow pit, a Marion 111-M shovel uses an Esco 4-yard dumper to load a Euclid. In addition to borrow-pit material, excavation for spillway, channel, tunnel, and canal excavations was used in the dam.



5 An Allis-Chalmers HD-20 tractor-dozing spreads a load of Zone 2 material as it is dumped on the embankment by a Euclid. At the same time, the tractor rakes out the large rocks, which will be saved for riprap.



6 As the earth is dumped and spread for the embankment, Southwest 50-ton pneumatic rollers pulled by Allis-Chalmers tractors compact the lift. In the background, a "Euclid" heads up the long ramp leading to the spillway area for another load.

Big equipment spreads build highest earth dam

Some 15,300,000 yards of earth and rock is placed
to complete hydroelectric project's 512-foot-high dam

by RALPH MONSON, field editor

A working schedule of 50,000 to 60,000 cubic yards of embankment placed per day brought Swift Dam to completion on the upper Lewis River in southwestern Washington. For the brief space until Trinity Dam is finished, Swift will hold the distinction of being the highest earth-fill structure in the world.

Built for a partnership of Pacific Power & Light Co., Portland, Ore., and Cowlitz County Public Utility District, Longview, Wash., the \$70-million project was constructed under several contracts. Bechtel Corp., Los Angeles, Calif., was the engineer for the owners.

The \$18,272,000 contract for the big dam and related construction was held by two contractors, a joint venture of J. A. Jones Construction Co., Charlotte, N. C., and Charles H. Tompkins Co., Washington, D. C. A preliminary contract on the dam site was completed by Guy F. Atkinson Co., South San Francisco, Calif. Atkinson also handled two contracts totaling about \$10 million for the two powerhouses, the canal connecting them, and other associated structures.

Swift Dam blocks a gorge high up

in the Cascade Range about 65 miles northeast of Portland. The site is just below the junction of Swift Creek with the Lewis River and is at the upper end of Yale Reservoir, which is also operated by PP&L. Rising to a height of 512 feet above its foundation, the big rolled earth and rock structure spans 2,100 feet across the gorge. Its base is 1,950 feet wide, and its top, 30 feet wide. The huge embankment contains 15,300,000 cubic yards of compacted material.

A concrete-lined spillway in the left abutment, controlled by two 50x51-foot radial gates, provides for the release of excess flows from the reservoir. A 25-foot-diameter power tunnel carries the water 1,535 feet through the left abutment to three 13-foot-diameter penstocks at the No. 1 powerhouse.

Three vertical Francis turbines, each with a rated capacity of 107,000 horsepower at 378 feet of net head, drive three generators with a combined rated capacity of 204,000 kw. This powerhouse and the dam belong to Pacific Power & Light Co.

From the No. 1 powerhouse, a canal carries the water 3½ miles down-

stream to the No. 2 powerhouse, built and owned by Cowlitz County PUD. At this powerhouse, two 16-foot-diameter penstocks lead the water to two 57,000-hp turbines driving generators with a total rated capacity of 70,000 kw.

The completed Swift hydroelectric installation, together with Pacific Power & Light Co.'s Yale and Merwin plants downstream, uses the full 1,000 feet of fall along 38 miles of the Lewis River for power production.

Closure and diversion

Under the preliminary contract, Atkinson drilled a 32-foot horseshoe tunnel 2,900 feet through the left abutment to provide for diversion of the river during the construction period, and constructed the cofferdam with material excavated from the dam foundation area. When the second-stage contractor moved in, the foundation excavation was well started.

Taking over on the second phase of the project, Jones and Tompkins completed the 900,000 cubic yards of foundation excavation and placed the cellular steel and concrete cutoff wall.

The cutoff penetrated down through layers of gravel and silt in the stream bed to solid rock below. The maximum penetration to rock was 85 feet.

Cellular pile cutoff

The units of the cellular pile cutoff wall were light 18-inch English H-beams with sections of interlocking sheet piling welded to the flanges. Handled in 50-foot lengths, the composite sections were set and jetted into the ground by a Bucyrus-Erie 54-B crane.

A special driving cap on a modified Vulcan No. 0 steam hammer, was used to drive the sections singly or up to three at a time until the penetration was less than a foot for 40 blows. The pile sections were then driven individually to refusal in rock. A Marion 111-M crane handled the converted double-acting steam hammer, which operated at 104 blows per minute.

When driven, these sections formed a row of 15x18-inch cells. The soil was jetted from the cells with air and water, and the cells were filled with concrete through a job-built tremie. An old 4-yard concrete bucket



7 Manufactured drain-zone rock for the chimney core on the downstream side of the impervious core is dumped by an International truck and spread by an Allis-Chalmers HD-9 tractor with a Baker dozer. The dozer is fitted with wings that confine the rock to the width of the chimney.



A Pettibone Speedall tractor shovel feeds aggregate to the conveyor belt leading to the bins of the Noble mobile plant. The plant supplied some 55,000 yards of concrete for the cutoff wall and other items in the dam contract.

(Continued from preceding page)

was attached to the top of the tremie to serve as a hopper. This bucket and the tremie were held by one crane as another bucketted the concrete from Dumpcretes to the tremie.

Topping the pile cutoff is a 30-foot-high concrete wall, 5 feet thick at the bottom and 2 feet thick at the top. This wall was formed with wood forms and Williams ties. The concrete was hauled to the wall in five Maxon 4-yard Dumpcretes on Ford F800 trucks and placed by crane and buckets.

Some 55,000 cubic yards of concrete for the piles, this wall, and all other concrete items in the Jones and Tompkins contract was produced in a Noble mobile concrete plant set up adjacent to the dam. Aggregates, produced under separate contract, were trucked to the site and fed into the plant by a Pettibone Speedall 250 tractor shovel. These shovels charged a low hopper, and a 100-foot conveyor belt raised the aggregates to the plant's 100-ton 4-compartment bins, which were equipped with double clamshell air-operated gates.

Cement for the mix was delivered by truck transport and stored in two silos that had a combined capacity of 1,000 barrels. Batching scales under the aggregate bins proportioned the dry materials, which were conveyed up an 83-foot conveyor to the mixer platform. A Smith 4-yard tilting mixer on the platform combined the dry ingredients with the required amount of water and Darex air-entraining agent and discharged to the Dumpcretes. Under normal operating conditions, this plant turned out about 60 cubic yards of concrete per hour.

A series of Stang pumps was installed in sumps to keep the foundation trench dry during this and the succeeding stage of the work. The sumps, consisting of 30-inch perforated steel pipes set on end, were later grouted full, after the embankment had been built up above water level.

Build dam embankment

Jones and Tompkins had assembled a large number of shovels, haul units, and supporting equipment to build the embankment at a rate of 50,000 to 60,000 cubic yards per day.

Included were two Manitowoc 4500's, one shovel with an Esco 5-yard bucket and the other rigged as a dragline with a Hendrix 7-yard bucket. A Marion 111-M shovel carried an Esco 4-yard bucket. There were four Bucyrus-Erie shovels ranging from two new 88-B 4-yard machines to a 1½-yard 38-B. A Manitowoc 3500 dragline and two Northwest 80-D shovels completed the excavating equipment.

The contractor used about 70 haul units—all Euclids except for five 10-yard Macks. There were 11 31TD and 10 63TD end-dumps and 18 LTD and 27 8TD bottom-dumps. The bottom-dumps were all sideboarded to increase their capacity at least 5 yards. Supporting the production units were 16 Allis-Chalmers HD-20 and HD-21

tractors, four Cat D8 tractors, three Allis-Chalmers 45 motor graders, two Southwest 50-ton rollers, two Cat DW10 water wagons, and an Allis-Chalmers HD-5, an HD-9, and an HD-16 with Tracto-Shovels.

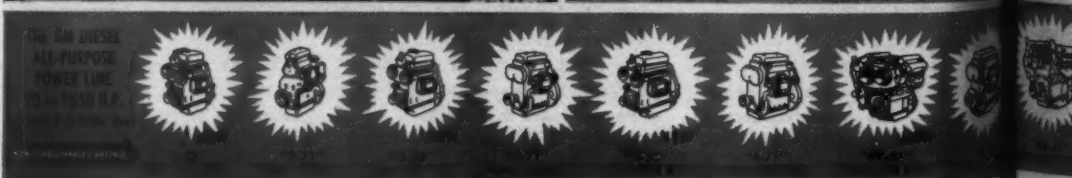
The cross section of the dam consists of a central impervious core of Zone 1 material surrounding the cutoff wall and extending on up to the crest of the embankment. The Zone 1 material in this part of the dam is a granular material obtained from one horizon of a borrow pit in the reservoir area. Although granular, it compacted readily into an impervious core.

Immediately downstream from the core is a chimney section designed to keep the downstream embankment drained. The chimney consists of a

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12-foot-wide course of manufactured rock ranging from No. 50 to 8 inches. On either side of this open rock is a buffer zone of filter material obtained from a river-bottom gravel deposit. The buffer zone between the impervious core and the drain zone is 8 feet wide, while the buffer zone on the downstream side of the drain zone is 20 feet wide. These buffer zones were very carefully placed to prevent contamination of the drain zone during construction. They prevent the leaching of fines into the drain zone when the dam is in operation.

The remainder of the dam, both upstream and downstream, consists of Zone 2 random earth and rock materials obtained from the excavations and from borrow areas. The faces of

the dam that may be subjected to wave action are protected with rock riprap that was combed out of Zone 2 material as the dam was built.

Near the bottom of the dam, the drain zone extends out through the downstream portion of the Zone 2 embankment to provide an outlet for the chimney.

Placing drain-zone chimney

The first operation in starting the embankment was to fill the 100-foot-deep foundation trench with Zone 1 material up to the normal stream bed, which is the base of the Zone 2 sections. Special care was required to get adequate compaction adjacent to the 30-foot-high cutoff wall. The rest of the area was compacted in the usual manner. As the Euclids dumped



Concrete was delivered to crews in Maxon Dumpcrete 4-yard bodies on Ford F800 trucks. The plant, with 100-ton 4-compartment aggregate bins and two silos holding 1,000 barrels of cement, worked at a production rate of 60 yards per hour.

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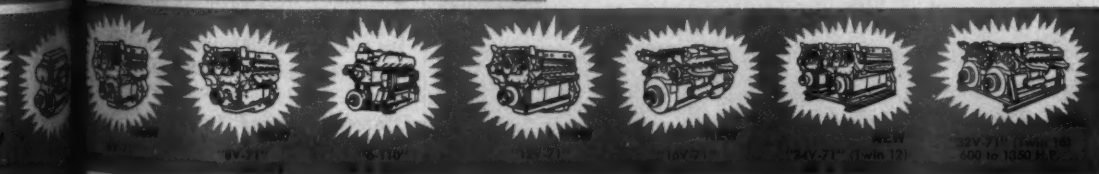
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the material, dozers leveled it into uniform courses of about 15 inches of the loose material. If required, water was added; then the course was thoroughly rolled by the Southwest 60-ton pneumatic rollers towed by Allis-Chalmers tractors.

Placing the drain-zone and filter materials was an entirely different operation. The 281,000 cubic yards of drain-zone rock was produced under a subcontract by J. N. Conley Co., Portland, which also produced the concrete aggregates for this contract. The rock was trucked to the dam and end-dumped in place to form the narrow chimney core.

To prevent the rock from spreading out wider than the 12-foot core, the contractor had the trucks dump into a spreader that had been improvised by attaching steel wings to each side of a dozer blade. The Baker dozer-spreader, mounted on an Allis-Chalmers HD-9 tractor, moved ahead as the truck unloaded, leveling the 24-inch-deep course of rock and confining it to the 12-foot width.

A backing of filter material was immediately placed against both sides of the drain-zone rock to hold it permanently in place. This filter gravel was obtained from a borrow pit in a river-bottom gravel deposit. A Bucyrus-Erie 54-B shovel worked this pit much of the time, loading the gravel into end-dump "Eucs."

On the upstream side of the drain zone, where the filter course is only 8 feet wide, the "Eucs" backed up against the drain-zone rock and dumped just a part of a load at a time in a series of dumps. This rock was leveled and pushed up against the drain zone by a Cat D8 tractor-dozor. On the downstream side, where the filter zone is 20 feet wide, the "Eucs" simply end-dumped beside the drain zone and the dozer pushed the material into final position. Since the Zone 1 material on one side and the Zone 2 material on the other side were built up right along with the drain and filter materials, the chimney zones never projected more than one course above the adjacent areas of the embankment.

Random embankment

Material for the Zone 2 or random portions of the embankment came from several sources. All suitable ma-

For more facts, use Request Card at page 18 and circle No. 255

MARCH, 1959



Working within view of Mount St. Helens, crews put down blast holes for the spillway excavation with a Joy wagon drill.

(Continued from preceding page)

terial from the spillway, channel, tunnel, and canal excavations went into the embankment, with the balance coming from several borrow pits.

Excavation for the spillway required the removal of about 2 million cubic yards of earth and rock. This excavation began high up on the left abutment and required a long steep ramp to get the "Euca" down to the base of the embankment. The "Euca" made good use of their compression retarders bringing their loads down and had no trouble climbing the grade empty.

The earth overburden was first stripped by the Bucyrus-Erie 88-B shovels and incorporated into the embankment. The rock crew then moved

in with eight Joy wagon drills and an Ingersoll-Rand drill to prepare for blasting. Air for the drills was furnished by two Gardner-Denver 900-cfm rotary compressors and three Ingersoll-Rand 600-cfm Gyro-Flo compressors.

Also located in the left abutment was a deep, narrow excavation for the forebay leading to the power tunnels. Unstable steep faces of rock on either side were covered with woven-wire mesh fabric firmly anchored at the top and tied in to the sides as a safety precaution during excavation.

The spillway gate structure and the spillway channel were lined with concrete out to a point where the discharge falls over a rock ledge and into the old river channel. A Clyde gantry crane handled the concrete and other materials in the spillway area.

Another interesting operation on the left abutment was the construction of the big surge chamber connected with the power tunnel. The surge chamber was excavated to a bore of 60 feet and then lined with steel and concrete to a net bore of 55 feet. It is about 200 feet deep.

Excavation for the surge tank began after the top of the left abutment had been stripped and leveled off. The excavation started in earth, but most of its depth was through rock. An Eimco overshot loader excavated the dirt, loading it into a 10-cubic-yard bucket. When filled, the bucket was raised to the surface by a Manitowoc 3500 crane, assisted by a Lorain 35-ton truck crane, and emptied into an end-dump Euclid.

In the rock, first a round was drilled and shot; then the Eimco loaded the rock into the bucket, which was handled in the same way as for the dirt. All of the material was incorporated into the Zone 2 portion of the dam embankment.

The surge-tank excavation was shored with rings of 8-inch WF beams bent to the 60-foot diameter of the hole with open lagging of steel channels. The section which penetrated soil was lagged tight with wood lagging to prevent a fall-in.

Power tunnel

Excavation and lining of the power tunnel were sublet to A. J. Cheff Construction Co., Seattle, Wash. The 1,535-foot main tunnel was bored to a diameter of 29 feet and lined with concrete to a net diameter of 25 feet. The three branches or penstocks were drilled to a 17-foot bore and lined to 13 feet. All of the tunnel has a steel penstock liner in addition to the concrete.

Cheff started in the powerhouse area, mining the three penstock tunnels first. Then he carried the main tunnel excavation through to meet the forebay excavation, which had not been completed when the tunneling started.

Another unique feature of the project was a drainage tunnel bored into the right abutment at the top of the rock to aid in keeping the soil

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drained. Vertical sand drains were placed through the overburden down to the tunnel, which outlets on the downstream side of the dam.

In good weather, the joint-venture contractors worked two 10-hour shifts, six days a week, to maintain a schedule of 50,000 to 60,000 cubic yards of embankment per day, while still making steady progress on all other phases.

Personnel

Project manager for the Bechtel Corp. on the Swift hydroelectric project was Earl E. Nichols; Paul W. Baker was resident engineer. The chief engineer for Pacific Light & Power Co. was vice president and chief engineer E. Robert de Luccia; P. L. Beadle was construction engineer.

Heading the staff of Jones and Tompkins was project manager Paul H. Swanson. On his staff were project superintendent William J. Kennish, assistant superintendent F. D. Bradbury, project engineer Joseph M. Oxendine, office manager R. C. Carleton, excavation superintendents Harold Taylor and George Carey, fill superintendent Sam Ware, and master mechanic Don Shultis. THE END

Mackinac Bridge erection depicted in new film

Intrusion-Prepakt Inc., Cleveland, Ohio, has issued a 16-mm sound film, "Carrying the Load at Mackinac," which deals with the construction work on the Mackinac Bridge. Special emphasis is placed on the erection of the bridge's 34 Prepakt concrete piers. Events and problems leading up to the project are also a part of the film story.

To assure complete understanding of the problems of placing concrete under water, the company has assigned members of its engineering staff to accompany the film, when such arrangements are desirable to the sponsoring group. There is no fee or obligation.

Engineering societies and other technical groups may obtain the film from the company's Advertising Department, 568 Union Commerce Bldg., Cleveland, or from any regional office.

Film depicts progress on Glen Canyon Dam

A 16-mm color movie with sound, "Taming a New Frontier," has been released by the International Harvester Co. Showing the building of the Glen Canyon Dam in northern Arizona, the 27-minute film graphically depicts the start of construction in 1954 and progress as recorded up to the present. Also illustrated are the birth of a new community and modern construction techniques.

The film may be obtained on a loan basis by writing to the Consumer Relations Dept., International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or through any of the firm's distributors.

For more facts, use coupon or circle No. 257--

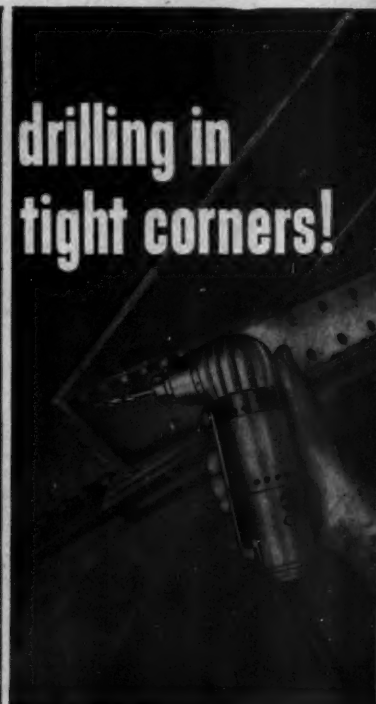
Workmen on ropes pick down loose material to keep it from falling on crews in the forebay area. Because of the steep sides and danger of falling rock, the faces of the excavation are being lined with woven-wire fabric.



Heavy drilling



...light drilling...



drilling in tight corners!

There's a Black & Decker Drill powered for every job!



LITTLE SHORTY's the drill you want for those hard-to-get-to, around-corner jobs. Gets in tight spots! Excellent for small unit assembly.



DRILLS UPSIDE DOWN! B&D Magnetic Drill Press sticks to the wall like a fly; operates manually or with exclusive remote control.

TERRIFIC TORQUE for the tough jobs. $\frac{1}{4}$ " H.D. Holgun® is geared and powered to take on the hard ones. Compact to work in close quarters.



MOST POWERFUL drill of its size available, the $\frac{3}{4}$ " Standard! A rugged tool with plenty of zip in reserve. Fully reversible; positive drive chuck.



71% of purchasing agents say make mine Black & Decker!

A recent industrial publishing company survey reveals that when purchasing agents need electric tools most think first of Black & Decker! One reason why: 33 different drills each designed to give you the power you need plus easy handling and long, troublefree life!

If you have a drill problem—a small hole in trim to a large hole up among the structural steel—be sure to see Black & Decker. Better still, mail the coupon for a free demonstration of our drill line. **THE BLACK & DECKER MFG. CO.**, Dept. 1303, Towson 4, Maryland. (In Canada: Brockville, Ontario).

Leading Distributors Everywhere Sell



Black & Decker
Quality Electric Tools ... Power-built for top performance

MAIL COUPON FOR FREE DEMONSTRATION

THE BLACK & DECKER MFG. CO., Dept. 1303, Towson 4, Md.

☐ Please arrange for a demonstration of the following drill(s)

☐ Please send me additional information.

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....



(Additional photo on front cover)

Relocating a maze of utilities—and maintaining them at the same time—required some difficult and interesting working techniques from the contractor on the new Southeast Expressway through the Boston-Dorchester area in Massachusetts. The expressway will tie into the Northeast Expressway via the J. F. Fitzgerald Expressway, which runs through the heart of Boston.

Coleman Bros., Hyde Park, Mass., working under a \$6,300,000 contract,

started by building bypass routes around new bridge locations; preparing structure foundations whenever possible; and relocating telephone, gasoline, sewer, water, and power utilities, plus police signal systems, and power cables of the Metropolitan Transit System.

Foundation work had to be started for the 1,800-foot-long elevated bridge that carries the two 49-foot roadways over Columbia Road, Metropolitan Transit System tracks, and

Relocation of utilities is big job on expressway

The need for relocating a sewer, and maintaining it during the work, was one of the difficult jobs on the Southeast Expressway project near Boston. This Lima is swinging an interlocking sheet pile to a wooden template for the wall of the 78-inch bypass sewer-line trench.



Over 2000
authorized
WISCONSIN
service
stations
are on call
if and when
you need
service!

Let's face it — even Wisconsin heavy-duty air-cooled engines need service and parts occasionally! This honest approach has an equally realistic stop-gap — the ever-ready network of authorized Wisconsin service stations where parts and service are available on a moment's notice. As a result, you're never caught with your engines down for long because Wisconsin service is as near as your telephone — whether your job takes you 50 miles or half-way around the world from your headquarters.

You can rely on expert service by Wisconsin-trained personnel. Most of them are graduates of periodic service clinics and are thoroughly familiar with the design, construction, and operation of Wisconsin engines. Each service station — whether it's in Fairbanks, Topeka, or Mozambique — has a stock of Wisconsin parts to assure fast delivery — to put your equipment or operation back in service with minimum delay.

Wisconsin heavy-duty air-cooled engines are known, used, and respected throughout the world. So are the more than 2000 authorized Wisconsin service stations and their work. You can rely on both to keep your jobs "on-schedule" anywhere, at any time! Write for Form S-198 which lists all the authorized Wisconsin service stations throughout the world.



WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

For more facts, use Request Card at page 18 and circle No. 258



Designed for maximum payload ...the new Etnyre model FX-500!

Talk about payload! Compare these Etnyre capacities to *your* state load limits: 1550 gallons for single 18,000# axle

1690 gallons for single 20,000# axle

1840 gallons for single 22,400# axle

You can count on similar greater maximums on semi-trailer single and tandem axle mountings too! And dependable operation, and uniform, accurate distribution are always typical of the results you can expect from an Etnyre. Look at the sharp, clean edges and the even distribution in the above photo of an Etnyre FX-500 and you can see the results of Etnyre's exclusive triple-lap coverage.

OTHER FX-500 QUALITY FEATURES:

• Hardened aluminum jacketing over 2" Fiberglass insulation which is reinforced with molded asbestos blocks • Stainless steel jacket near burners and exhaust stacks • Stainless steel heat jacket for pump • Aluminum fenders and mud flaps.

You're familiar with Etnyre's accuracy and dependability . . . now you can get maximum payload too . . . for maximum profit. Investigate today — find out how a "Black-Topper" can handle more work . . . faster . . . better . . . more economically.

SEE YOUR ETNYRE DEALER

ETNYRE
"Black-Topper"
BITUMINOUS DISTRIBUTORS

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CONTRACTORS AND ENGINEERS

the New Haven Railroad tracks. This elevated structure alone costs \$3,533,000—over half of the total contract price. It is a steel stringer structure, resting on steel column-supported bents. The columns rest on concrete footings that encase 4 to 8 BP73 steel H-piles per footing. About 40,000 linear feet of piling was needed to furnish the bearing required for each footing.

Over 5,500 tons of structural steel, supplied by Bethlehem, plus 1½ mil-

lion pounds of reinforcing steel, was required to complete the project.

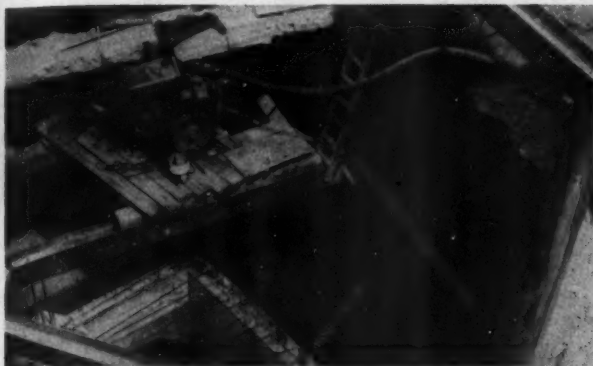
Sewer relocation

One of the interesting phases of the job arose when a 600-foot-stretch of 6-foot-diameter sewer line had to be relocated because the expressway alignment passed over the existing facility.

This operation called for the installation of a 78-inch-diameter reinforced-concrete line between the

existing 6-foot sewer and the 10½-foot-diameter main line it feeds. Before the connection between the new 78-inch line and the existing 10½-foot sewer could be made, an elaborate junction chamber was designed and revised in the field. Original plans had called for a manhole connection at the upper junction of the 6-foot and 78-inch lines, but this was revised to permit the contractor to build another junction chamber at this connection.

Basically, both junction chambers are similar in concept. A concrete wall was poured around the existing line and the 78-inch line. Interlocking sheeting was driven through the existing 6-foot line to divert the flow into the new 78-inch bypass. The flow was contained, at the time of sheeting break-through, by the concrete walls making up the chamber. After diversion, the junction chamber was topped with a concrete slab to complete the junction. The lower



A Jaeger pump, driven by a Waukesha engine, keeps the excavation dry during construction of the junction chamber that will connect the new 78-inch bypass line to the 10½-foot-diameter existing sewer.



Excavation for a power line on a relocated service road is done by an Insley backhoe. This road is used to reroute traffic while a bridge is built over the expressway.

HOW TO "BELT" TIE-WIRE PROBLEMS



When workers use CF&I Annealed Cal-Tie Wire in the handy, belt-borne dispenser, the weight and worry of clumsy shoulder coils is eliminated. There are no loose wire ends—hence no danger of facial scratches or costly eye injuries.

With this modern method of carrying re-bar tie wire, both hands are free—wire can't kink, tangle or catch on protruding objects, thus work in close quarters is easy and safe.

Your workers will like the convenience and safety of Cal-Tie Wire and you will appreciate its efficiency and economy. Cal-Tie Wire Coils weigh approximately four pounds and the wire is available in 14 through 20 gage. Why not get full details now from the nearest sales office listed below.



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THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Nebr.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita
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For more facts, use Request Card at page 18 and circle No. 260

MARCH, 1959



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Demand this Rating Plate for your protection.

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THE JAEGER MACHINE CO.
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JACUZZI BROS., INC.
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Belgium, Wisc.

STERLING MACHY. CO.
Los Angeles, Calif.

WORTHINGTON CORPORATION, Contractor's Pump Division, Plainfield, N. J.

For more facts, use Request Card at page 18 and circle No. 261

(Continued from preceding page)

junction, even though similar to the proposed upper connection, had a few variations, since the flow in the new 78-inch line had to be diverted into the 10½-foot main trunk.

When the bypass was completed, the decommissioned 600-foot stretch of the 6-foot line was pumped full of hydraulic fill. This eliminated the need for removing the line.

Junction construction

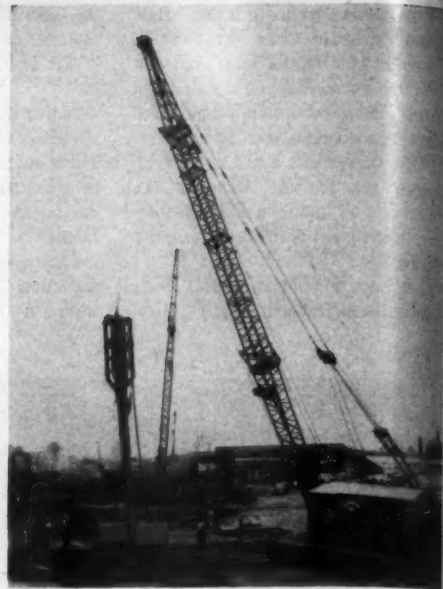
While the contractor kept busy with the installation of the 78-inch-diameter line, the lower junction chamber—between the 78-inch and 10½-foot lines—was being built. Interlocking steel sheeting was driven around the area where the chamber

was to be built by a Lima crane with McKiernan-Terry hammer. This required great care to prevent the sheeting from penetrating the existing 10½-foot sewer line.

The area was then excavated by a clamshell bucket until the 10½-foot line was reached. Then the 10½-foot sewer was exposed by manual excavation and wrapped with cables and 4×10-inch timbers to protect it from any break-through as overburden was removed. The 1-foot-thick reinforced-concrete chamber walls were cast in place around the 10½-foot line and the last section of the 78-inch bypass line leading into the junction chamber.

Supporting the walls is a concrete footing about three feet thick, which rests on a 12-inch gravel blanket and

Steel H-piles for the piers of the Columbia Road bridge are driven by another Lima. A cage of steel members, equipped with a collar that slips over the pile, encloses the Vulcan No. 1 hammer. This eliminates the need for guides in this area of soft ground.

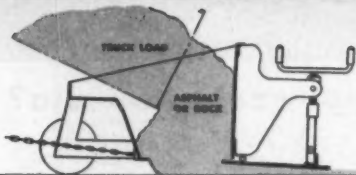


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CITY OF EL CERRITO (Calif.)
uses ROLA-PAVER on extensive repaving program.



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- Eliminates wheel and shoe marks, practically no raking required!
- Fast — standard Rola-Paver spreads up to 500 tons per day!
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- Low investment, negligible maintenance cost!
- 3 basic models — 9'6" Base Paver, 8'6" or 9'3" standard Rola-Paver, and new 8' light weight (950 lb.) model.

FAST BASE SPREADING, TOO!

Spreads base materials in up to 8" depths with exceptionally accurate control, at rates up to 200 tons per hour (crusher-run base).

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is adjacent to the 10½-foot sewer. The concrete chamber walls, poured with ready-mix concrete, were built up to an elevation 2 feet above the top of the sewer line and embedded the 78-inch pipe into the chamber. A Jaeger pump, driven by a Waukesha engine, kept the excavation dry during the construction of the junction chamber.

The diversion in the junction was accomplished without the need for driving sheeting. This diversion had to be carefully timed to allow the flow to leave the 6-foot sewer line, pass into the new 78-inch line, and flow into the 10½-foot line at the lower junction.

Chambers sealed

After the diversion, both junction chambers were sealed with a 12-inch slab. The lower chamber was topped by a hollow reinforced-concrete box 7 feet high. This box, measuring 20×25 feet, was placed atop the junction

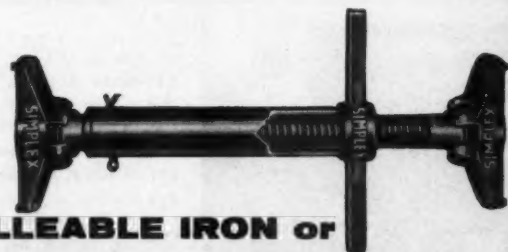
chamber to support and protect the chamber from the 30-foot run of the service road ramp running off the Columbia Road bridge. This transfers the load to the chamber side walls and in so doing eliminates the load that would normally be supported by the junction chamber.

Bypass excavation

The contractor used a Lima crane to excavate and drive the sheeting for the 78-inch bypass line between the two junction chambers. Using a clamshell bucket, the crane dug from 5 to 10 feet of overburden before driving the trench sheeting.

The clamshell bucket of the crane was then replaced by a McKiernan-Terry clothespin-type hammer powered by a Jaeger 600-cfm air compressor. The 40-foot-long interlocking steel sheeting was driven about 35 feet to form the 16-foot-wide trench for the new line.

After the sheeting was cross-braced,



MALLEABLE IRON or DROP FORGED?

Rugged dependability suggests that you insist on the best — Simplex drop forged steel trench braces.

Ball and socket joints at each end for tight grip at any angle. Blunt lever nuts or 3-way nuts — nail holes in both screw and butt ends. Furnished with or without pipe.

Simplex drop forged steel trench and timber braces cost no more and better eliminate the danger of cave-ins and costly re-digging.

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TEMPLETON, KENLY & COMPANY
2511 Gardner Road
Broadview, Illinois

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CONTRACTORS AND ENGINEERS

the trench excavation was carried down to about 28 feet, where a reinforced-concrete pipe cradle was built to support the 78-inch bypass line. It measures 9 feet 9 inches in width and is 3 feet 9 inches thick on each side extending up around the new line.

Driving steel piles

The contractor drove the steel 12-inch H-piles for the Columbia Road bridge piers with a Lima crane and a Vulcan No. 1 hammer powered by a Jaeger 600-cfm air compressor. Pile-driving guides were not used in the area of the railroad and transit tracks in order to reduce the weight of the driving rig on the soft ground. Instead, Coleman Bros. rigged up a cage composed of steel members to enclose the hammer. The cage was equipped with a collar to slip over the top of the pile, allowing the contractor to use a free-hanging hammer with enough stability to position, hold, and drive the 60-foot-long piles.

A pile was positioned over the desired location by placing it between two notched beams supported by two longer members spanning the pile pit. When the pile was in place, the two notched beams were held in position by two heavy concrete blocks placed at the ends of the members. Steel bars were placed in the notches to maintain the correct alignment of the piles. When a batter was required, the weight of the free hammer was used to tilt the pile to the proper angle. In these cases, the steel bars supported the bottom portion of the pile while the desired batter was being obtained and checked.

Once this was done, a steel bar was placed in the beam notches on each side of the pile to maintain the correct batter during driving. Piles were driven to resistance, or to a point where it required 35 blows of the hammer to drive 1 inch. The average length of the piles was 60 feet, but penetration varied from 35 to 105 feet. When penetrations were greater than 60 feet, pile sections were spliced.

The contractor had to coordinate equipment schedules carefully because of restrictions imposed by the transit and railroad companies. Within the area of the Metropolitan Transit tracks and the New Haven Railroad, pile driving and concrete placing can be done only between 1:30 and 5:30 a.m. Near this area, such operations are allowed only in intervals between trains.

Steel erection in the area was done only between trains, during the night, and over the weekends.

When completed this September, the project will provide two 39-foot asphaltic-concrete roadways, separated by a 6 to 12-foot grassed median. The roadways will consist of three 13-foot lanes having a 2½-inch wearing surface over a 4½-inch penetrated macadam base course.

Chris Vrachos is the superintendent on the job for Coleman Bros., and David Coffe is the resident engineer for the Massachusetts Department of Public Works.

THE END

MARCH, 1959



HYPERBOLIC PARABOLOIDS of Fiberglass-reinforced plastic, called Plasta-Shade, compose a new plant building for Structural Plastics, Inc., near Stephenville, Texas. Jacks raise the arch to allow another row of units to be added. The truss arch, spanning 78 feet without vertical supports, was pretested to an equivalent of 20 pounds live load. When completed, the building will be made up of 617 of the 4-foot Plasta-Shade units.

New BROS Roller... See how you can benefit by these 15 improved features



NEW EASE AND SPEED FOR BASE AND SURFACE COMPACTION

Big news about the new 3 to 10 ton BROS SP-54B.

A new "Velvet Drive" hydraulic reversing transmission provides sure, effortless control for back-and-forth rolling. Automotive type hydraulic power steering and short turning radius makes turn-arounds easy—even on city streets.

Especially important, horsepower is correctly matched to job needs, keeping your fuel costs and engine maintenance to the minimum. Yet it provides the extra draw bar pull to tow a second roller on base and grade work.

A 40 gal. gas tank keeps the SP-54B working a full shift without refueling stops. High travel speeds to 20 MPH cuts time traveling between rolling jobs.

Special sculptured roller chain sprockets provide

full oscillation of drive wheel pairs. This eliminates complicated mechanisms which require frequent maintenance or service. New, 60% over-size high capacity Timken wheel bearings are mounted on husky, high-strength axles. A special triple groove steel labyrinth type seal and triple lip synthetic grease seal keep dirt and grit out.

Parking brake on drive shaft and individual service brakes on all 4 drive wheels add 95% more brake capacity... adding a greater margin of operator safety and control.

OTHER SP-54B FEATURES INCLUDE:

Torque converter drive... Direct connection of steering ram to front bolster... Lower center of gravity and lower silhouette... Easy access to drive train... New plastic scrapers to prevent tire pick-up... 100% coverage by ½ in. tire overlap.

Get the full story. See your BROS Dealer or write for full information and/or demonstration.



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Write today for a new 8-page catalog which fully describes the SP-54B. It's free of cost or obligation!



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35-TON SELF-PROPELLED ROLLER



VIBRA-FACTOR



9 AND 13-TON ROLLERS

For more facts, use Request Card at page 18 and circle No. 264

This distributor deals in service



A half-million dollars' worth of parts, kept on hand in the headquarters of Hodge & Hammond, Inc., New York City, is used to fill 90 per cent of over-the-counter orders. But this is only part of the story: repair department, showroom, and offices play important roles in the dealer's success.

If you were told that an equipment dealer maintained a parts inventory valued at over half a million dollars—while doing an annual gross business of \$6 million—your first thought probably would be that the company had adopted unrealistic business practices that eventually would lead to disaster.

This, however, is not the case for Hodge & Hammond, Inc., New York City, one of the country's leading equipment dealers, and an AED member for about 20 years.

Slogan states policy

"If I'm going to go broke, I'll do it by giving service to our customers." This motto of L. J. Hammond, president and one of the founders of the company, precisely describes the philosophy that has made Hodge & Hammond such a success.

No one will argue that an equipment dealer's success depends to a great extent on maintaining the good will of its customers. The only argument that arises is: to what extremes should a dealer go in developing this good will? Some will say that half a million dollars' worth of parts, for a company this size, is too much of an investment.

This may be true, but when a company stocks over 50,000 different items, in sufficient quantity to fill immediately over 90 per cent of the counter requisitions, there is no alternative. The company is justly proud of this record and does not plan to alter any of these policies.

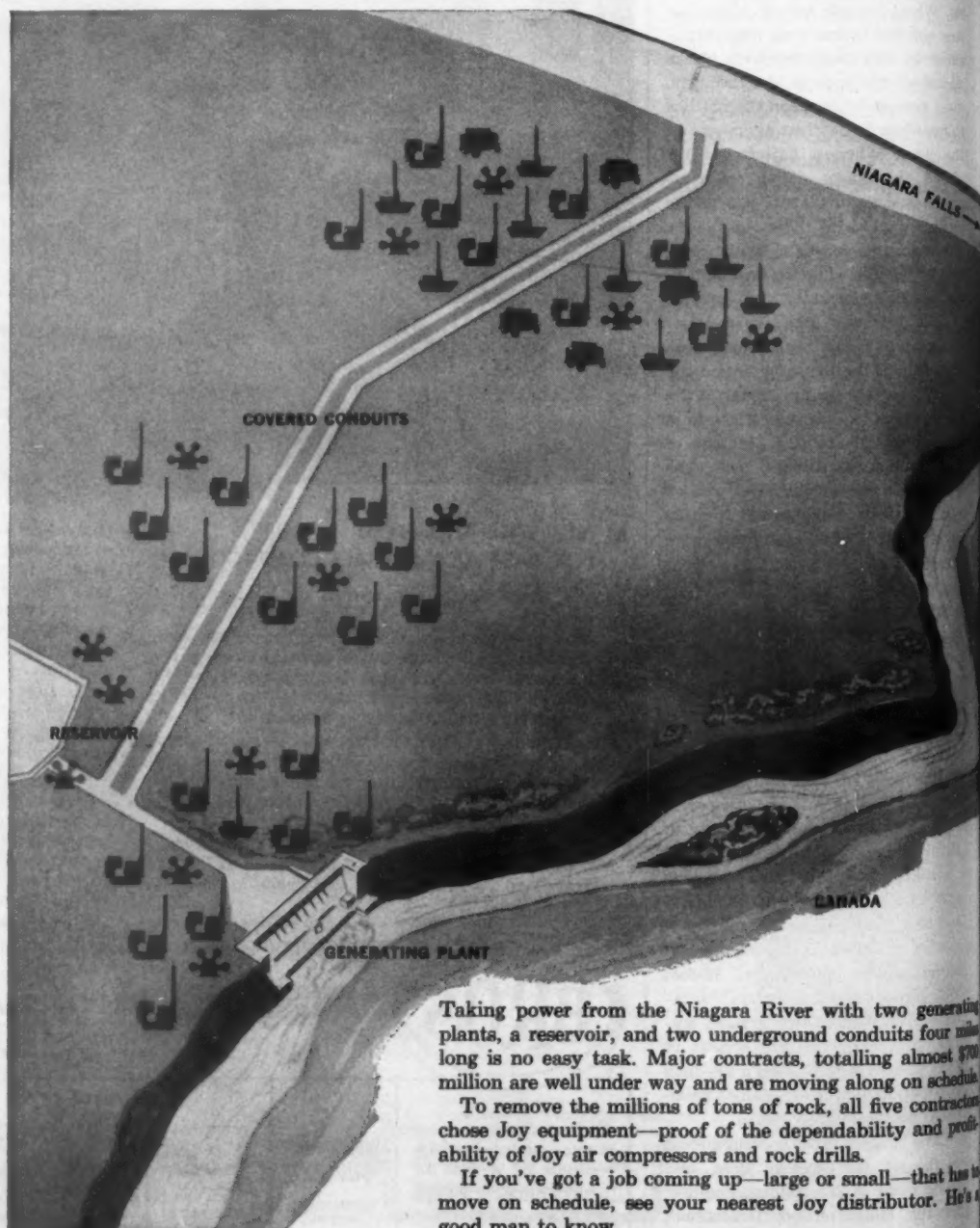
Records on these items are maintained in such a way as to provide the company with a perpetual inventory. Each separate item stocked in the parts department is listed on a 5x8-inch card filed in the accounting office. Information posted on these cards includes the part number and description; cost and selling price; location in the parts department; model of machine the part is for; in and out invoice records; orders awaiting delivery from manufacturer; whether sold domestically or exported; and minimum and maximum balances to be maintained. The last entry determines when and how many of an item should be reordered. This is done when the minimum point is reached in order to bring the item to its maximum balance.

Whenever the parts department receives a shipment or fills a customer's order, the invoices are sent to the accounting department, where the information is posted on the cards.

The parts department is available to customers 24 hours a day, 7 days a week. This is done by having a watchman at the office, outside of office hours, to call a parts-department member living near the office to fill an emergency order. This service is maintained at no extra cost to the customer, even though the parts-department member answering the call is paid at overtime rates.

At times when a requisition must be filled fast and the part is not

JOY EQUIPMENT



Taking power from the Niagara River with two generating plants, a reservoir, and two underground conduits four miles long is no easy task. Major contracts, totalling almost \$700 million are well under way and are moving along on schedule. To remove the millions of tons of rock, all five contractors chose Joy equipment—proof of the dependability and profitability of Joy air compressors and rock drills.

If you've got a job coming up—large or small—that has to move on schedule, see your nearest Joy distributor. He's a good man to know.

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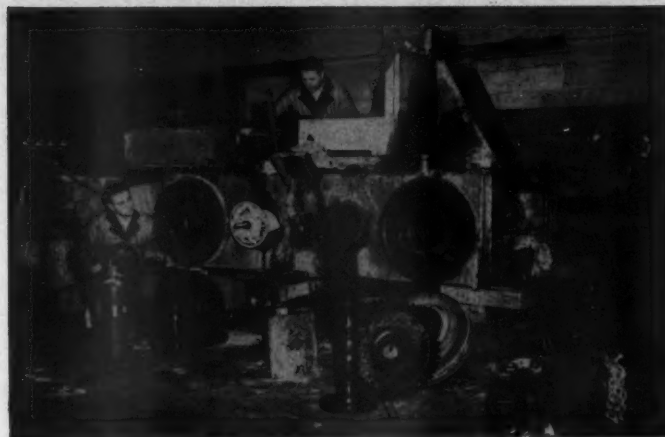
stocked, Hodge & Hammond ships the part from the factory by air. The extra cost is absorbed by the company many times when newly purchased equipment is involved, and it is written off as good will.

A few years back one of the manufacturers represented by Hodge & Hammond came out with a new equipment line. One model was purchased by Hodge & Hammond with enough spare parts to service the machine in case anything went wrong. The cost of these parts was more than the profit made on the sale of the machine. Not knowing exactly what to stock, because the equipment was new, the company purchased

enough spare parts to anticipate future orders. This is just one example showing to what extent Hodge & Hammond will go in order to maintain topnotch service for its customers.

Fleet sales

To protect customers against equipment downtime on large fleet purchases, Hodge & Hammond has many times maintained spare parts and a mechanic on the job. The mechanic is stationed on the job full time to supervise maintenance and spare-parts handling. This service provides the customer with on-the-spot repair parts without charge; the only



Mechanics completely strip a LeTourneau-Westinghouse Tournado for an overhaul job. This is the first time the machine has been overhauled since it was purchased several years ago.

Chosen for Niagara, one of world's largest rock removal jobs



JOY WN-224 COMPRESSORS—These big units produce 3700 cfm each. Thirteen of these package-type machines are being used by four contractors. Notice the compact design and the simple, relatively light foundations. Installation was quick and easy because the compressors arrived at the site completely assembled.



JOY RP-900 ROTARY PORTABLE COMPRESSORS—These portables are big and rugged—supply 900 cfm each. Even in Niagara's extreme weather, a thermal by-pass valve in the oil cooler system assures adequate lubrication in cold weather. Joy rotaries operate in low temperatures that would keep other portables shut down.



TWENTY-SIX LARGE DRILLS USED . . . JOY CHALLENGERS—With cuts as deep as 200 feet to make, the Niagara job requires big drills. Twenty-six of these Joy TWM-5 Challengers are being used. Mounting the powerful 630 lb. TM-500 drifter drill, the Challengers are punching 4" and 4½" holes down to 30' deep without a steel change.



JOY TDM TRAC-DRILLS—Eight of these fast-moving TDM's mounting TM-450's and TM-500's are being used, along with nine Joy wagon drills that mount the Joy TM-400 drifter. These TRAC-DRILLS work right alongside the larger Joy Challengers, drilling 3½" and 4" holes.

charges made are for actual spare parts drawn from the stockroom.

The service policy was instituted in 1950 to handle large fleet purchases. Lately there has been a trend among contractors to switch from single purchases of equipment to fleet purchases. This was recognized by the company in 1950, and since then spare parts and mechanics have been stationed—with no extra cost to the contractor—at Newfoundland, Puerto Rico, Bermuda, and many areas outside the dealer's domestic territory. This overseas work again shows to what extent and expense the company goes in order to service an equipment fleet.

Two service trucks, equipped with about 300 repair parts, work out of the main office shop and concentrate on the smaller equipment purchases throughout the 22-county territory. These trucks are on the road most of the time, answering calls. Because Hodge & Hammond has no branch offices, charges for the labor and cost of answering service calls are figured in line with those of the nearest competitor. This is done, of course, to keep the charges in line with the nearest competitor's. After completing each call, the service-truck crew telephones the main shop to pick up any emergency calls.

Company history

The company was founded in 1933, as an equipment distributor servicing New York City and surrounding counties, by L. J. Hammond, H. H. Hodgkinson, and W. Harmon.

Hammond and Hodgkinson, who was better known as "Hodge," were both salesmen for one of the leading New York City equipment dealers. Harmon was the Eastern sales manager for manufacturer represented by the equipment dealer. During the hard years of the depression, the three men decided to start their own equipment company, and every competitor prophesied that the business would not last more than six months.

Total personnel at that time numbered only six, but today the company has about ten times that number on the payroll. The one major equipment account has grown to eleven exclusive accounts, and the territory served includes northern

JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA.

JOY

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company
(Canada) Limited, Galt, Ontario



For more facts, use Request Card at page 18 and circle No. 265



Records on over 50,000 different items, stocked in the parts department, are kept in such a way as to provide the company with a perpetual inventory. This department is open to customers 24 hours a day, 7 days a week.

(Continued from preceding page)

New Jersey, Long Island, the southernmost county in Connecticut, and New York City.

Harmon retired from the equipment business in 1939 and, when Hodgkinson died in 1947, Hammond assumed complete control after buying Hodgkinson's interest in the company.

Since it was established, the company has been trying, with great success, to build up its equipment accounts to serve excavating and road-building contracting firms. At present the roster of manufacturers—LeTourneau-Westinghouse, Yale & Towne, Adams, Blaw-Knox, Huber-Warco, Universal Engineering, Murphy Diesel, Standard Steel, Rosco,

Ottawa Steel, Winalow Scale Works, Page, and Rud-O-Matic—permits any road-building or excavating contractor to purchase everything needed from grading and crushing equipment to concrete or asphalt-paving machines.

All new equipment purchases are delivered to the customer accompanied by a service man. It is his job to make sure the machine is serviced and working properly, and that the new owner is familiar with the operation and maintenance procedures to be used. Contact is always maintained by the salesman, who reports anything wrong to the service department. There are 12 full-time salesmen in the field at all times and 27 service-department employees to handle repairs in the field and at the main shop. Five pickup trucks, a station wagon, a boom truck, and a low-bed trailer are available to the service department.

Personnel

L. J. Hammond is the president and treasurer; G. D. Hammond, vice president; George W. Lochner, vice president in charge of office sales; Bertram F. Bongard, secretary and corporate attorney; John R. Diehl, assistant secretary and office manager; George Pipp, parts manager; and Allen K. Hammond, advertising and sales promotion manager.

THE ENR



earth moving?

US[®] AXLE SHAFTS

**LENGTHEN work LIFE ...
LESSEN work COST!**

Are you moving earth—or pay dirt? Heavier loads, fewer trips, and continuous operation put the pay in payloads with U.S. AXLE SHAFTS. Their built-in overload capacity is the result of our extra toughening process that multiplies the toughness of fine heat-treated alloy steel as much as 5 times! Keeps down maintenance costs of excavators, dump trucks, etc. by eliminating breakdowns due to axle failure.

Custom-engineered or exact duplicates of manufacturer's specs, tougher U.S. Axles keep on saving money through a long life of dependability.

You, too, can produce a superior product or maintain a good one better, with a tougher U.S. AXLE SHAFT. Call your jobber, or "talk axles" with US.

"THE WORLD TURNS ON U. S. AXLES"



FREE literature on the "Cause and Prevention of Axle Shaft Failure."

WRITE for illustrated SHAFT BOOKLET on custom production of special shafts.

THE US AXLE COMPANY, INC.
Since 1920 • Pottstown, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 266

B-E Hydrocrane dealers

Flack Equipment Co., 1240 McCook Ave., Dayton, Ohio, has been appointed a Hydrocrane distributor for Bucyrus-Erie Co., South Milwaukee, Wis. The dealer will offer sales and service on 5 and 12-ton-capacity Hydrocranes and 3/8- and 1/2-yard Hydrohoes and Hydroshovels. Flack Equipment will cover 14 counties in Ohio, three in Kentucky, and five in Indiana.

The Construction Service Equipment Co., 21st and Pacific Sts., Omaha, and 10th and Vine Sts., North Platte, Nebr., has added Hydrocranes to the line of excavating and crane equipment that it distributes for B-E. The dealer offers sales and service in the state of Nebraska, with the exception of 11 counties, and the Iowa counties of Lyon, Sioux, Plymouth, Woodbury, Monona, Harrison, Pottawattami, Mills, and Fremont.

Let-WesCo names dealer

LeTourneau-Westinghouse Co., Peoria, Ill., has appointed the Southeastern Equipment Co., Old Washington, Ohio, a distributor for the firm's line of motor graders and TravelLoaders. The dealer's territory consists of 18 southeastern Ohio counties.

Seven Diamond T dealers

Diamond T Motor Truck Co., Chicago, Ill., has appointed seven new dealers to carry its line of heavy-duty motor trucks and parts. The new dealers are: Don B. French & Assoc.

CONTRACTORS AND ENGINEERS

dates, Walla Walla, Wash.; Diamond T Montana, Miles City, Mont.; Segal Truck Sales & Service, Inc., Lafayette, Ind.; Collier's Truck Service, Uniontown, Pa.; Carolina Parts & Equipment Co., Hampton, S. C.; Diamond T Truck Sales, St. Paul, Minn.; and Paling Motor Service, Hamilton, Ont., Canada.

Dozen winners in Barnes' equipment sales contest

Nine members of Associated Equipment Distributors were among the 12 top winners of a Blue Ribbon Merchandise Prize Contest, sponsored by Barnes Mfg. Co., Mansfield, Ohio. The contest was conducted among the firm's construction-machinery distributors. Awards were based on the greatest percentage increase in business during the May-September period in 1958 as compared to the similar period in the preceding year.

AED members among the top 12 were: Casey-Gesner Equipment Corp., Newington, Conn.; Construction Equipment Co., Charleston, W. Va.; Henry H. Meyer Co., Baltimore, Md.; Shovel Supply Co., Dallas, Texas; Stillwell Supply Co., Long Island City, N. Y.; Rudd Construction Equipment Co., Inc., Louisville, Ky.; Stewart Equipment Co., Harrisburg, Pa.; H. J. Zoubek, Hillside, N. J.; and Construction Equipment Co., Birmingham, Ala.

The other winners were: Central Equipment Co., Berkeley, Calif.; R. M. Wade Co., Seattle, Wash.; and Central Texas Equipment Co., Austin, Texas.

New dealer appointed for Oxalid division

Kraemer White Inc., of Rochester, N. Y., has been appointed a distributor by the Oxalid Division of General Aniline & Film Corp., Johnson City, N. Y. The division manufactures whiteprint copying machines and sensitized materials for engineering, drafting, and office use, as well as a varied line of allied products for the industry.

Dealer moves, alters name

The Emmett C. Watson Co., Inc., has changed its name to Rudd Construction Equipment Co., Inc. At the same time, the company has moved into a new plant on a 4-acre site at 4344 Poplar Level Road, Louisville, Ky.

New Prime-Mover dealer

A. H. Cox Co., 1757 First Ave. S., Seattle, Wash., has been appointed an exclusive distributor for The Prime-Mover Co., Muscatine, Iowa. The dealer will cover the western half of the state for the company, which makes powered carts and a fork-lift for handling concrete and masonry materials.

Oliver Corp. appoints

The Oliver Corp., Chicago, Ill., has appointed the Carr Equipment Co., Inc., 2918 S. Parsons Ave., Columbus, Ohio, as distributor in 25 Ohio counties for its industrial crawler and wheel tractors with allied equipment. The firm has also named S. R. Hartman, Jr., district representative of its Industrial Division. Hartman plans to establish industrial dealerships in northeastern Ohio.

McNall Machinery opens new branch office

McNall Machinery & Supply Corp., Cedar Rapids, Iowa, has opened a branch on Highway 20 East, Fort Dodge, Iowa. David Ghysels as head

of the branch will supervise the sales, service, and parts distribution in the western half of the state for all lines of equipment handled by McNall, such as Sargent and Insley cranes, shovels, and draglines; Oliver tractors; Trojan loaders; and Hercules-Gallon ready-mix equipment.

Paul McNall has been appointed vice president and sales manager for the company.

Dealer for Ohio firm

Parker-Hannifin Corp., Cleveland, Ohio, has appointed the W. E. Thew Supply Co., Inc., 339 S. Broadway, Green Bay, Wis., to distribute Parker industrial tube and hose fittings in that area. W. E. Anderson, district manager for the manufacturer in

Milwaukee, will supply technical assistance on fluid-handling circuits where required.

Superior Scaffold news

The Superior Scaffold Co., 5624 Bankfield Ave., Culver City, Calif., is now offering franchises to dealers who wish to buy direct from the manufacturer, and who are active in selling to the construction industry. The firm, manufacturer of products for all scaffolding purposes, has also inaugurated a program to aid dealers who wish to set up a scaffold rental business.

Distributors—we shall be glad to receive data on new appointments, personnel changes, etc. Photos, too.



Only **CONCRETE** roads automatically provide 100% added strength for lasting load-bearing ability!

Laid flat, concrete stays flat. Traffic rides smooth and steady . . . travels fast and far. Modern concrete is the engineered pavement . . . designed mathematically to specific wheel load requirements. When you work to accepted design practice, you get a pavement that can support twice the rated axle load . . . a 100% margin of strength.

That's why concrete will stand up not only to rated axle loads in normal volume, but even in peak volume,

with such loads running bumper to bumper . . . and last an expected 50 years and more. Reserve strength like that saves taxes and complaints. It's a big reason why upkeep costs will run as much as 60% lower than for flexible pavement.

Concrete often saves money in other ways, too. For example, on the Indiana Toll Road, engineers drew up designs for both types of pavement, proved concrete would save \$9,740,000.

And truckers are the experts who can tell you that today's concrete means gentle treatment of cargoes. It's the flattest, smoothest-riding pavement there is. Small wonder concrete is the preferred pavement for the Interstate System and other heavy-duty highways.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete
For more facts, use Request Card at page 18 and circle No. 267





N. K. Holding has been appointed construction machinery sales manager for the Syracuse, N. Y., branch of Allis-Chalmers Mfg. Co., Milwaukee, Wis. He joined this branch last November as assistant construction machinery sales manager, a post he previously held in the firm's Columbus, Ohio, branch.

A former distributor supervisor for the Northeast Region of Allis-Chalmers Industries Group, Joseph Varacalli is now supervisor of original-equipment manufacture and distributor sales for the New York district. He

has been with the organization since 1945.

E. E. Strickland has been appointed manager of general products division sales for the Industries Group's Northeast region, with headquarters in New York. Strickland came to Allis-Chalmers in 1949.

The A-C Industries Group also announces the appointment of R. H. Porterfield as manager, Industrial Sales, New York district, and of W. T. Farnsworth as manager of the Hartford, Conn., district.

E. C. Stork has been appointed manager of the Longview, Texas, plant of Marlow Pumps, division of Bell & Gossett Co., Midland Park, N. J. This plant is a sales and assembly unit of the Marlow Division.

Ernest J. Willson, engineering manager of the Fuel Injection Division, Hartford Machine Screw Co.



Ernest J. Willson has been appointed engineering manager of the Fuel Injection Division, Hartford Machine Screw Co., Hartford, Conn. Willson has served the firm as a field engineer and had charge of application work for the Roosa Master fuel injection pump. Prior to his promotion, he was chief development engineer in charge of the Development Section.

Thomas D. Hess, chief development engineer in charge of the Development Section, Hartford Machine Screw Co.



Thomas D. Hess takes over Willson's former post. Hess was previously field engineer in the Fuel Injection Division.

Lester F. Kuzmick, vice president of Felker Diamond Drills, Inc., has been named vice president of Felker Mfg. Co., Torrance, Calif. Kuzmick, an 18-year veteran in the diamond-tool research and development field, came to Felker Diamond Drills a year ago, and has since been engaged in producing a full line of Core-Lock surface-set diamond core drills, as well as developing core drilling machines. At the same time, he has acted as director of research and superintendent of diamond-tool production for Felker Mfg. Along with his new position, Kuzmick will continue in his present capacity with Felker Diamond Drills, Inc.

General Electric Co.'s Communication Products Department, Lynchburg, Va., has made two key appointments in its two-way radio sales organization. John E. Strehle is now Southern Florida district sales manager at Pompano Beach, and Jack Najork is in charge of the firm's two-way radio office in Chicago. Strehle, formerly communications engineer for the department's office at Tampa, Fla., will in his new post integrate the sales programs of manufacturer's representatives who sell G-E radio equipment to business firms, industries, and municipal agencies. Najork, previously in charge of two-way radio sales in southern Illinois, covers in his new territory parts of Illinois and Indiana.

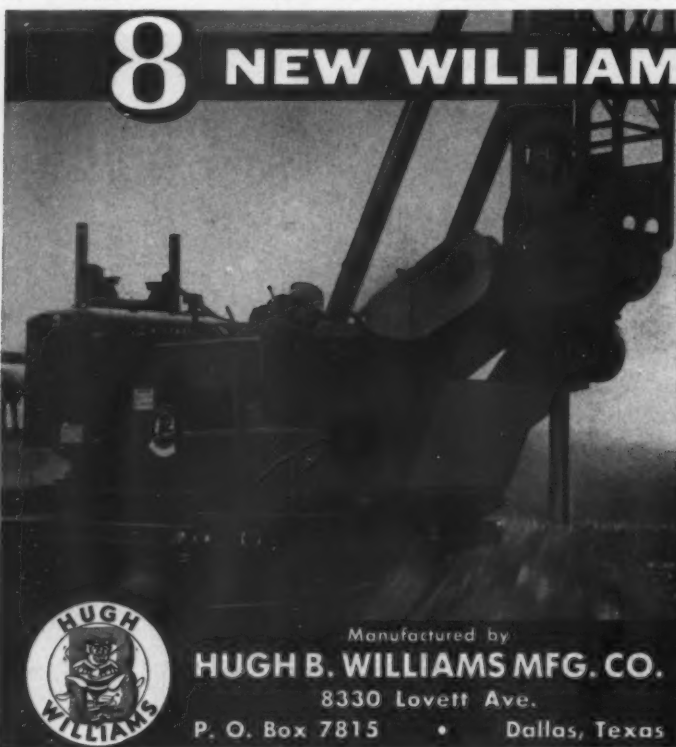
George C. Holton has been named assistant to the general manager of the Organic Chemicals Division, American Cyanamid Co., New York City, and Dr. J. C. Lamb, III, is now sanitary engineer for the division. Holton had previously served in the firm's explosives department since 1934, and Dr. Lamb had been sanitary engineer for the Bound Brook, N. J., plant.

Dr. N. B. Sommer, formerly assistant to the executive vice president, has been appointed manager of the company's explosives and mining chemicals department.

Weldon Thalacker has been made sales engineer for the Eagle Iron Works of Des Moines, Iowa. Formerly in the engineering department, he recently supervised the construction and erection of Eagle heavy-media separation plants. His experience in

8

NEW WILLIAMS MODELS




Doubtless you have heard of one, maybe two, of the digger models manufactured by Williams; but did you know that—this is the only complete line of earth-boring equipment available? Whether you need an 8 inch diameter hole 10 feet deep or a 10 foot diameter hole 120 feet deep, there is a Williams available for the job.

OR if you have a drilling problem which is beyond the capacity of standard Williams equipment, our design department will analyze the available data and make suitable special equipment proposals.

ADH - BDH - MF
LDH - LLDH - TBDH
MDHU - LDHU

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*Gritty mud would
mar the markings
on most tapes!*

This Chrome Clad® tape is Lufkin's 50-foot ANCHOR model. It looks quality in its hand-sewn leather case . . . it is quality.

A special kind of electroplating protects the tape from the damage of mud, sand and grit. The bold black markings are bonded to the steel base . . . protected by layer after layer of electroplating . . . topped by a final coat of tough chromium. Glare free, corrosion resistant, longer lasting—this is the tape preferred by every professional. Available with markings in feet, tenths and hundredths.



For more facts, use Request Card at page 18 and circle No. 269



Weldon Thalacker, sales engineer, Eagle Iron Works, Des Moines, Iowa.

road-building techniques and the use of aggregates was gained, in part, through his early association with the Iowa State Highway Commission.

Alfred F. Mansbach has been appointed advertising and sales promotion manager of the Tractor Division of The Eimco Corp., Salt Lake City, Utah. Mansbach will originally concentrate on the Eimco 150 tractor and related units.

The company, with headquarters in Salt Lake City, also manufactures excavators and loaders.

Breckway Motor Trucks, division of Mack Trucks, Inc., Cortland, N. Y., has appointed Chester W. Anderson as plant manager of the factory facilities at Cortland. Anderson was formerly with the International Harvester Co., serving in various managerial capacities, and most recently as works manager of the company's Fort Wayne plant.

E. Alfred Nelson is now market research manager in the planning department of the Bucyrus-Erie Co., South Milwaukee, Wis. Nelson has been engaged in marketing research for the past nineteen years.

Bucyrus-Erie manufactures cranes and excavators, large stripping shovels, walking draglines, and similar equipment.

Kaiser Aluminum & Chemical Sales, Inc., has appointed Ford R. Morrow as manager of industrial construction product sales, with headquarters at the company's general sales office in Chicago. In his new post, Morrow will be responsible for sales of Kaiser Aluminum's highway products such as bridge railings, signs, and chain-link fencing; industrial roofing; and products for various structural applications.

Robert J. Warren has been named field engineer for the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. He will assist in the sales service of Michigan construction machinery, handle job estimating, and secure, classify, and organize technical data through field tests and regular field engineering activities.

The division has also appointed William A. Keehn as special representative and John E. Horton as district representative for the Michigan line. Keehn will work with distributors throughout the country, primarily demonstrating new machines and visiting projects and plants. Horton, working with distributors in Ohio, Michigan, Indiana, and Kentucky, will be responsible for sales of the division's construction and bulk-material-handling equipment.

Leonard J. Battaglia has been named manager of communications marketing for the Communications Products Department of Radco Corp. of America, Camden, N. J. In his newly created post, Battaglia will be responsible for the marketing of RCA's microwave, marine, and mobile-communications products. He was formerly marketing manager of the Components Division, and associated with the marketing services unit of the company's industrial electronic products.

Vernon S. Barnes has been named director of marketing for the Unit Crane & Shovel Corp., Milwaukee, Wis. His duties will cover the fields of research, sales promotion, and product development. Barnes was formerly associated with the Reliance Electric & Engineering Co.



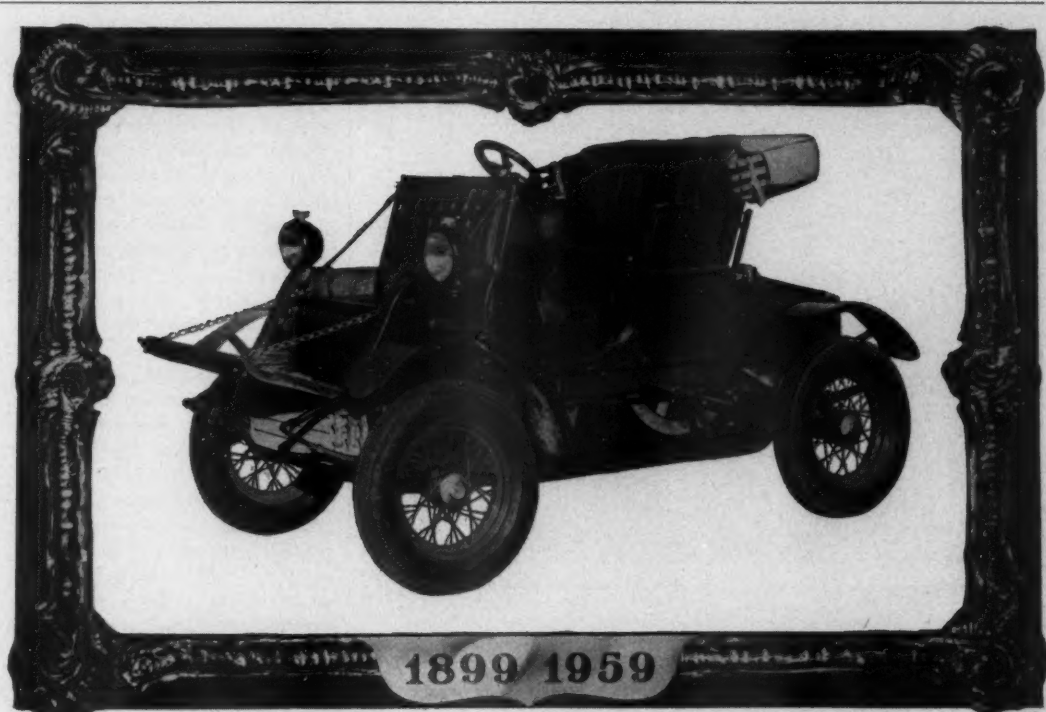
Vernon S. Barnes, director of marketing, Unit Crane & Shovel Corp., Milwaukee, Wis.

Other appointments announced by the company are: J. W. Lenahan, sales manager; Troy Cook, assistant sales manager; LeRoy Schaefer, parts sales manager; Gene Gilsch, service manager; Carl Fairbanks, assistant chief engineer; and William L. Redditt, Jr., Eastern District representative.

The United Concrete Pipe Corp. of Baldwin Park, Calif., has elected William F. Greenway vice president in charge of all operations.

The firm, a subsidiary of U. S. Pipe & Foundry Co., operates plants in California, Texas, Utah, and Washington; and makes concrete pipe and custom-fabricated steel products.

John W. Freund has been appointed manager of the Central District for the Metal Products Division, Koppers Co., Inc., Baltimore, Md. He will work from headquarters in Pittsburgh, Pa. Sidney H. Fedan, formerly assistant manager of the sound-control department, succeeds Freund as manager of the Western District with headquarters in Los Angeles.



Everything's changed but the trademark on the bearings

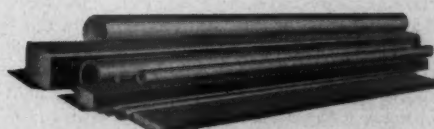
BUILT by the St. Louis Motor Car Co. in 1899, this car was the first equipped with Timken® tapered roller bearings. It's still running. And today every make of American car but one uses Timken bearings. The things that the trademark "Timken" stands for haven't changed. It still means the highest quality, the best-known name in bearings, and the kind of service

you can't get anywhere else. It means better performance with longer life and less maintenance in machine tools, steel mills, heavy construction machinery, farm implements and tractors—wherever wheels and shafts turn.

"Timken" is a registered trademark that identifies all products of The Timken Roller Bearing Company—tapered roller bearings, fine alloy steel

bars, seamless steel tubing and removable rock bits.

It's to your advantage to remember that "Timken" is not a type of product. It's your assurance of the best in tapered roller bearings, fine alloy steels and removable rock bits. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".



TAPERED ROLLER BEARINGS • REMOVABLE ROCK BITS • FINE ALLOY STEEL

TIMKEN®

first in quality for 60 years

For more facts, use Request Card at page 18 and circle No. 273

Clerical functions:

Bookkeeping on large jobs



by **GEORGE E. DEATHERAGE, P. E.**
construction consultant



Austin-Western hydraulic crane gently lowers a 3-ton block of concrete into place on flat bed truck.

Austin-Western hydraulic crane does anything . . . goes anywhere on \$6,500,000 highway project

"It's fast, mobile and versatile. We use the Austin-Western hydraulic crane to do just about everything on the job," reports Norman J. Maggione, general superintendent and vice president of the Bero Construction Co., Waterloo, N.Y.

Two places at once

Bero's \$6,500,000 project, a part of the Niagara section of the New York Thruway calls for six bridges in 1 1/4 miles. Mr. Maggione says, "We have one A-W crane on the job and wish we had more. Our job is split in sections by railroad yards and city streets. Because of their speed and mobility, the self-propelled, rubber-mounted A-Ws can just about be in two places at once.

"Using the A-W crane has doubled our speed in setting bridge panels. It maneuvers easily among tubular pilings

and can turn on a dime. It has plenty of traction and power on any type surface.

Economical to operate, maintain

"We've got lots of economy right along with outstanding job performance. One man on an A-W can often do the work of four. We haven't had any maintenance problems.

"The A-Ws are radio-dispatched. People are always calling for one to get them out of a spot or to speed things up. It's the most versatile piece of equipment on the job!"

Learn more about this Model 210 hydraulic controlled precision crane with 18-ft. telescoping boom and 360° swing, all-wheel drive and steering. Contact your nearby Austin-Western distributor or write us today.

Austin Western
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

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Bookkeeping is only a small part of the over-all duties of the clerical department. The nature and extent of clerical duties will vary with the size and nature of the work. In many cases, the actual bookkeeping is done at a main or central office, and the chief clerk or office manager on the job has nothing to do with it except to make up the payrolls.

In other cases, the clerical department will have many extra duties such as labor distribution and cost reports. This is true on smaller work where the operations do not warrant either a cost engineer or a department of planning and production. On large work, the department will have to handle invoices, payrolls, billings, freight charges, telephone and telegraph, stationery and mail, etc.

Where no engineering department is required, the chief clerk is usually the second in command in the office, under the project manager or superintendent, handling all the paper work and business details.

Invoices for materials and partial payments on subcontracts should be requested and received in triplicate, particularly on cost-plus contracts, so that the owner has a copy for his records. On their receipt, invoice clerks check all items—such as quantity, unit price, price extension, discount terms—against the purchase

order and receiving report.

The chief clerk is expected to take the cash discount when it is allowed on bills. This applies to all cash and trade discounts. On bills that have freight deductions, the discount should be figured after the deduction for the freight has been made. When the invoice is paid by check, the number of the check is entered on it and also in the Journal.

Subcontractors that do not have a sufficient financial rating should not be paid in full until they have furnished a Release of Lien, signed by all parties that have furnished labor or materials in connection with their contract. No final payments should be made on any subcontracts until they are approved by the superintendent or project manager.

If the bookkeeping is done at the main or central office, the invoices are sent there directly, and payment made on the Receiving Report clearance from the chief clerk on the job.

Contra charges

Contra charges or back charges to a vendor or subcontractor should be made on an invoice only when these charges are detailed so that the contractor or vendor will not have to ask for an explanation. When labor is supplied to subcontractors, it should be supported by a signed order from

Roper CONSTRUCTION DIGGER DIGS GUARD RAIL HOLES. **4 ft. deep**



... AND ADJUSTABLE FOR 3 1/2 ft., 5 ft., 6 ft.

"ALL DEPTH" DIGGING BUILT INTO ONE DIGGER — A ROPER FIRST!

All tractor, Jeep and truck attachments and various diameter sizes available

Send for colorful FREE brochure. For an actual demonstration, see your Roper dealer, or write Dept. C

Roper MFG. CO. Zanesville Ohio

For more facts, use Request Card at page 18 and circle No. 275

CONTRACTORS AND ENGINEERS

This is the fortieth of a series of articles on Construction Management by George E. Deatherage, P. E., consultant to National Schools of Construction Management and Heavy Equipment Operation, P. O. Box 527, Welser, Idaho, and P. O. Box 8243, Charlotte, N. C. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by the National Schools. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees at the foreman level or its equivalent, who need practical help in order to take complete charge of construction projects themselves.

the representative of the subcontractor on the job.

Back charges are a serious bone of contention on almost all construction, and it is imperative that some system be set up to handle them to avoid controversy and also to assure that the charges will reach the clerical department in time to be deducted from money due.

However, there are occasions when it is necessary to furnish, and later back-charge, subcontractors with the cost of labor and materials in connection with the work they may be doing on the job site. Also there are times when vendors are back-charged for expense on their account.

When the subcontractor or his approved representative wishes to be furnished with labor or materials, he makes a written request to the field superintendent who, if he approves, authorizes the planning department to issue a change order.

This form is to be filled out in quadruplicate and all copies presented to the subcontractor or his approved representative for signature. After this, the original is sent to the clerical department, one copy to the subcontractor, one copy to the storekeeper, and one copy to the chief timekeeper. These signed copies are the authority for collecting charges against the subcontractor for

any labor or materials furnished.

Stores are to be issued on the regular form, which is signed by the subcontractor, countersigned by an authorized person, and passed through regular channels to the clerical department. The forms are available in the event of a dispute over charges.

When invoicing the subcontractor for materials, the clerical department will add 10 per cent to cover the cost of handling, freight, etc. Field cost engineers accumulate all labor charges in the usual manner, and make charges to the time tickets to the proper change order number; no second or third number classification is required. All labor tickets covering charges on the change order requested by the subcontractor are signed by a foreman or authorized representative.

Making corrections

In addition to the actual cost of the work performed, or the labor, or materials supplied to the subcontractor, the clerical department, at the time of billing, adds 20 per cent to cover insurance and overhead expense. In cases when it is necessary to make corrections or rework equipment or materials in the field because of errors on the part of a supplier, it is in order to back-charge

(Continued on next page)



Austin-Western Roller-Compactor combines static and vibratory force to work fines into stone base aggregates.

Austin-Western Roller-Compactors let you lay fewer courses—cut costs!

Austin-Western Roller Compactors do a deeper, faster consolidating job. They combine the advantages of both vibratory and static compaction, assuring maximum density of all types of material and profitable operation.

Vibrates up, rolls down

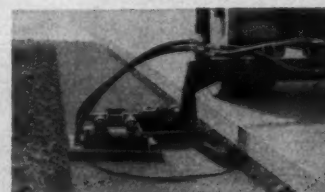
For vibratory compaction, three 450-lb. shoes are attached to a basic 3-wheel roller. Each shoe, hydraulically operated, vibrates approximately 2200 times per minute. This motion extends to the bottom of the lift and then reacts upward, thereby keying low-level material for maximum consolidation in the fewest number of passes. At the same time, the roller unit applies static pressure so as to effectively seal the surface.

There is more profit to be made with an Austin-Western Roller-Compactor. It operates at speeds up to 1 mph. Fewer passes are required because of its efficient double action. Fewer courses are required. It compacts lifts of stabilized material up to 12 in. in successive passes . . . no more need to

remove previous courses if final tests reveal insufficient density.

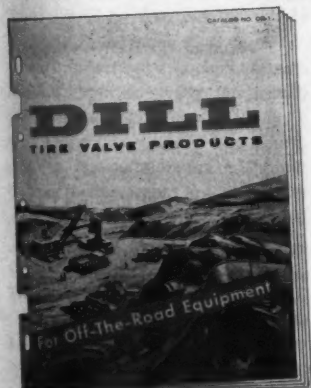
Designed for rugged service

Maintenance requirements are low. Vibratory units are sealed in oil, completely protected from dirt . . . designed for dependability under rugged service conditions. Available now for Austin-Western and most all other makes of 3-wheel rollers. Get full information today on the cost cutting Austin-Western Roller-Compactor. See your nearby A-W distributor or write to us.



Vibratory widener attachment—for use with any 3-wheel roller equipped with A-W Roller-Compactor unit . . . may be mounted left or right.

FREE! Newest, Most Complete Off-The-Road Tire Service Catalog



- * Contains valuable information to reduce equipment downtime, cut tire maintenance costs!
- * 16 pages of information about special off-the-road tube and tubeless valves, valve hardware, fittings, swivel-type valves, air-water valves, extensions, pressure gauges, valve tools . . . everything you could possibly need to service off-the-road tires!

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for your
Free Copy
TODAY!

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Name _____
Company _____
Address _____
City _____ Zone _____ State _____

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MARCH, 1959

Austin Western
BALDWIN • LIMA • HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 277



Approved
Answer
Lesson-#83

GEO. E. DEATHERAGE & SON
BALTIMORE, MARYLAND
Periodical Estimate for Partial Payment

TO:
Owner Acme Wire Box Co. Project Warehouse
Architect Geo. E. Deatherage & Son Location Baltimore
We Request Payment of \$17,785.00 on the Above named Project for Estimate
No. 4 as per Detail shown

Item No.	Description	Value Original Estimate	Completed to date % Value	Uncompleted work % Value
(1)	(2)	(3)	(4)	(5)
1.	Gen. Cond.	1434.19	95 1362.48	5 71.70
2.	Job O. H.	2921.00	95 2774.95	5 146.05
3.	Tools & Equip.	2607.75	95 2477.36	5 130.39
4.	Exc. etc.	1374.14	100 1374.14	

Figure 1.

World's Largest Truck Uses Ten MECHANICS Roller Bearing UNIVERSAL JOINTS

Capable of hauling 165 tons of dirt at 35 miles per hour over rough roads, this huge truck stands 45 feet (over four stories) high. Its power transmission train must stand up under hour-after-hour, day-in-and-day-out of gruelling service and deliver hundreds of thousands of miles of trouble-free service. Because the MECHANICS JOINTS used drive through KEYS—instead of bolts—they withstand this type of punishment—that would shear off other types of fasteners.



MECHANICS
Roller Bearing
UNIVERSAL JOINTS

For Cars • Trucks • Tractors • Farm Implements • Road Machinery • Aircraft • Tanks • Busses and Industrial Equipment

They are designed with less parts and connections for easy assembly and servicing—smooth running balance—maximum strength with less weight—and long, trouble-free, safe operation. Rugged stamina is just one of the advantages you get when you specify MECHANICS JOINTS. Let Mechanics engineers help you design this and other competitive sales features into your product.

MECHANICS UNIVERSAL JOINT DIVISION
Borg-Warner • 2030 Harrison Ave., Rockford, Ill.

Export Sales: Borg-Warner International
36 So. Wabash, Chicago 3, Illinois

For more facts, use Request Card at page 18 and circle No. 278

(Continued from preceding page)

the cost of the work to the supplier. First, it is necessary to thoroughly check the purchase order or subcontract, plans, and specifications before it can be determined who is to stand the cost of such corrections or charges. If the supplier is at fault, the superintendent contacts the supplier, advises him of the conditions, and requests permission to make the correction.

In some instances, the supplier may wish to make the necessary corrections himself. Here, there would be no need to issue a change order. Again, there may be instances where the supplier will authorize the contractor to make the corrections and charge the cost to the supplier account. In this case, the change order is issued and handled as before. Corrections are made in the field only with the specific approval of the supplier or on orders from the field superintendent.

When completing work on any special change order for correcting errors made by the subcontractors or suppliers, the clerical department makes up an invoice for approval before actual charge is made against their account.

Main office invoices

It is a good practice for the main office to charge the job for equipment rentals at going rates. This is ordinarily done by making up dummy invoices, which are presented to the project manager for approval before they go through the regular routine of being posted to the books. As with other documents, these should have the signature of the owner's representative on cost-plus or fee contracts.

In cases where the main office is charging the job for such expense as preparing working drawings, dummy invoices are also prepared, and these are approved by the project manager before being processed in the regular manner.

When paying invoices, it is usual to accompany the check with a memorandum advising the supplier of the invoices covered by the check.

The clerical department also handles the accounts receivable. This includes not only recording the cost of goods sold but also invoicing the owner and making collections from him. The amounts due or accounts receivable are summarized monthly from the Ledger accounts.

Partial payment

On most construction, contracts call for monthly payments on account, whether the work be on a lump-sum, unit-price, or cost-plus basis.

In order to create the foundation for monthly billings, three basic values must be established: value of the original estimate, value of work completed to date, and the difference or the value of uncompleted work. Figure 1 is a convenient form for listing these values.

If the estimate has been properly prepared, in a systematic and orderly

CONTRACTORS AND ENGINEERS

manner, it is a simple matter to establish all the values for all parts of the work, with practically no additional computation. Each subdivision of the work can be totaled in money simply by adding the labor and material figures for each of these subdivisions. The work is further simplified if the Contractor's Estimate Record and Summary Form has been used. Assuming that the estimator has broken down his estimate to the various items in the Cost Code of construction accounts, one posts the items by Cost Code numbers under the item number, followed by a description of the account in the adjacent column. Entries are for general conditions, job overhead, plant and equipment, etc., until all items are covered to the total amount of the estimate.

If the job is being done under a lump-sum contract, the estimated value for each of these subdivisions—with overhead and profit added—is posted in the column headed Value—Original Estimate. If this is not done and the overhead and profit are carried as separate items, the owner is supplied with what is usually confidential information.

Value Completed to Date is computed as a percentage of the original estimated value in the previous column, being the sum of the labor, materials, overhead, and profit. The percentage of completion is established by referring to the Recapitulation Sheet for labor, as this gives the estimated quantity and the actual quantity completed to date, which can be reduced to a percentage of job completion. Applying this percentage to the values of the original estimate will establish the figures needed.

The Value of Uncompleted Work, in the final column, is simply the difference between the two values already discussed. Not all billings will need to establish the values for uncompleted work, but where this request for partial payment must first be approved by the owner's representative, or by federal, state, or local authority, this data is usually required before approval is given.

Billing lump-sum contracts

The owner is not entitled to examine the contractor's record on lump-sum contracts, and should not be furnished with any actual costs. Separate billings should also be rendered for all lump-sum extra work orders, and these should be handled in the same way as the main contract.

Billing the owner on cost-plus or fixed-limit contracts requires a considerable extension of detail, and the documents themselves should consist of a billing, accompanied by a monthly statement.

In all cases, copies of paid invoices, payrolls, petty-cash vouchers, etc., should be attached to the billing to substantiate all charges billed. Suppliers must, in these cases, cooperate by supplying at least three copies of all invoices for such purposes.

(Continued on next page)

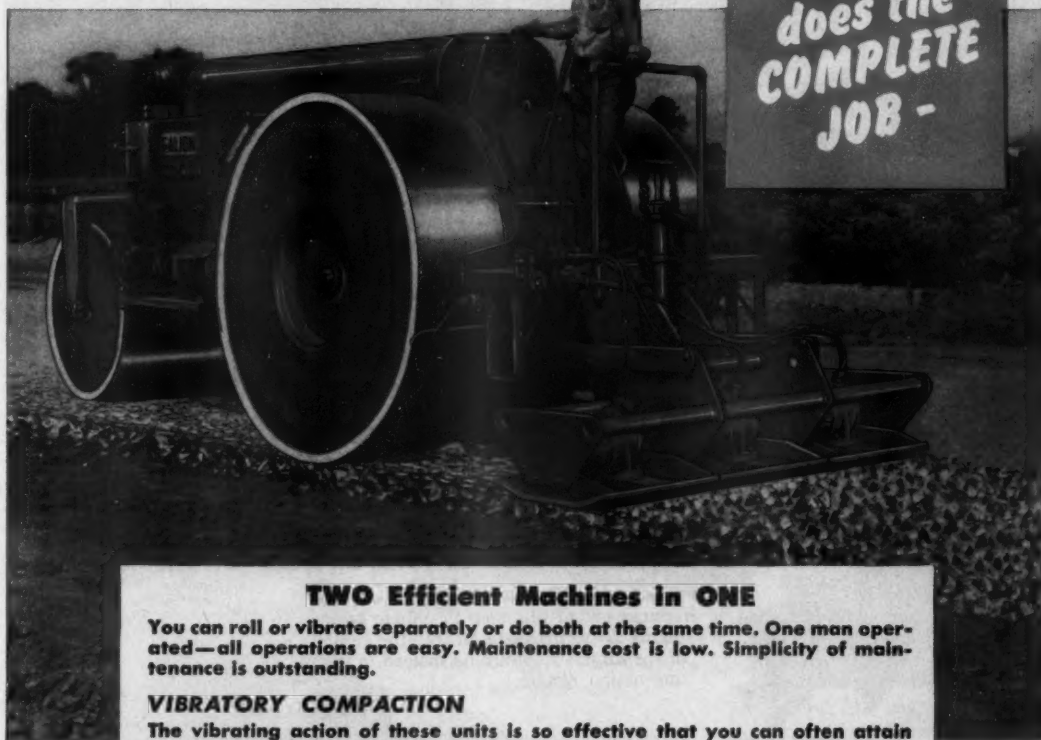
Figure 1.
(Reverse side)

ANALYSIS OF ADJUSTED CONTRACT AMOUNT TO DATE	
Original Contract Amount.....	\$ 58,149.00
Plus: Approved Addition Change Orders...(Cash).....	\$ 607.80
Less: Approved Deduction Change Orders.....	\$
Net Adjusted Contract to Date (Col. 3 Front).....	\$ 58,756.80

ANALYSIS OF WORK PERFORMED AND PAYMENT DUE	
Value of Contract Work Performed to Date (Col. 4 Front).....	\$ 55,918.00
Plus: Materials Stored at Close of This Period (See Schedule Below).....	\$ 300.00
Amount Earned to Date.....	\$ 56,218.00
Less 15 Per Cent Retained.....	\$ 8,433.00
Total Net Payments Due to Date.....	\$ 47,785.00
Less Total Previous Payments.....	\$ 30,000.00
Balance Due This Payment.....	\$ 17,785.00

SCHEDULE OF STORED MATERIALS THIS ESTIMATE	
Elec. Fixtures.....	150.00
Paint.....	150.00
	300.00

GALION VIBROSTATIC COMPACTION ..



TWO Efficient Machines in ONE

You can roll or vibrate separately or do both at the same time. One man operated—all operations are easy. Maintenance cost is low. Simplicity of maintenance is outstanding.

VIBRATORY COMPACTION

The vibrating action of these units is so effective that you can often attain specified densities for granular soil bases in one pass.

STATIC COMPACTION

All the usual rolling operations can be done by the 3-wheel roller—simply raise the vibratory unit hydraulically and proceed with all roller compaction jobs, sealing in the surface materials or smoothing the finished surfaces.

BONUS USES

The vibrator power generating unit can be operated separately to provide 110 volts for electric lights or for driving small tools.

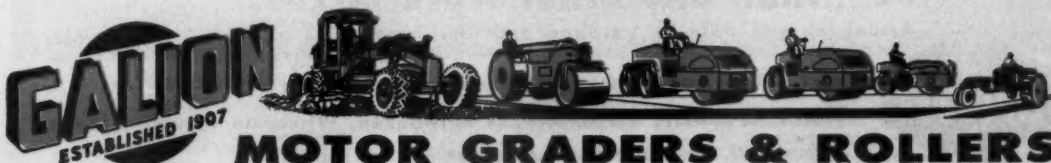
Write for literature on the—

GALION 3-WHEEL ROLLER with ELECTRIC VIBRATORY COMPACTOR

THE GALION IRON WORKS & MFG. CO.

General and Export Offices—Galion, Ohio, U.S.A.

Cable Address—GALIONIRON, Galion, Ohio



MOTOR GRADERS & ROLLERS

For more facts, use Request Card at page 18 and circle No. 279

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ENGINEERS

from local printing concerns.

Among forms that are very useful is one that is used when an invoice is received that contains dozens of items, each of which must be posted to different Ledger accounts. It simplifies book work, when checking the invoice, to make the distribution on a separate sheet as a guide to the ledger clerk in making his postings. When complete, this form is stapled to the invoice for permanent filing.

Many accountants prefer what is known as the voucher system of keeping books over the double-entry system that requires a Cash-Journal. The Cash Voucher Register is the book of original entry for this system. The books consist of voucher envelopes or folders, Voucher Index, Voucher Record, Cash Voucher Register, and the General Ledger. A special voucher system for contractors has been developed by Frank R. Walker Co., Publishers, 173 W. Madison St., Chicago 2, Ill. The firm also supplies numerous special and standard forms for the construction industry.

(Next month's article will deal with "Purchasing: Fundamentals of the Purchasing Department.")

Maryland road commission has leaflet on new route

To acquaint tourists traveling north and south along the Atlantic Seaboard with the advantages offered by the Chesapeake Bay Bridge and Maryland Routes 71 and 301, the Maryland State Roads Commission has published a descriptive leaflet. This scenic route avoids city traffic and passes through some of the most historic parts of Maryland.

The folder contains a map of the region between the New Jersey Turnpike and the Potomac River Bridge on U. S. Route 301 to Richmond and the South. Copies of the leaflet are available to automobile clubs, toll facilities, and route associations.

Wisconsin Motor marks golden anniversary

This year, the Wisconsin Motor Corp., Milwaukee, celebrates its golden anniversary. Just 50 years ago, a group of engineers started the company to build water-cooled engines for the budding automotive industry.

During World War I, the company's entire production was devoted to engines for the 4-wheel-drive "Liberty" trucks, which were the standard vehicles for the Ordnance Department. In the 1920's, a full line of water-cooled engines was built for power shovels, draglines, air compressors, rock crushers, and marine applications. Later in that decade, the firm began experimental development of heavy-duty air-cooled engines.

Gradually, production of water-cooled engines was decreased and in the early 1940's abandoned. Since then, the entire engineering and manufacturing facilities of Wisconsin Motor Corp. have been concentrated exclusively on heavy-duty air-cooled engines.

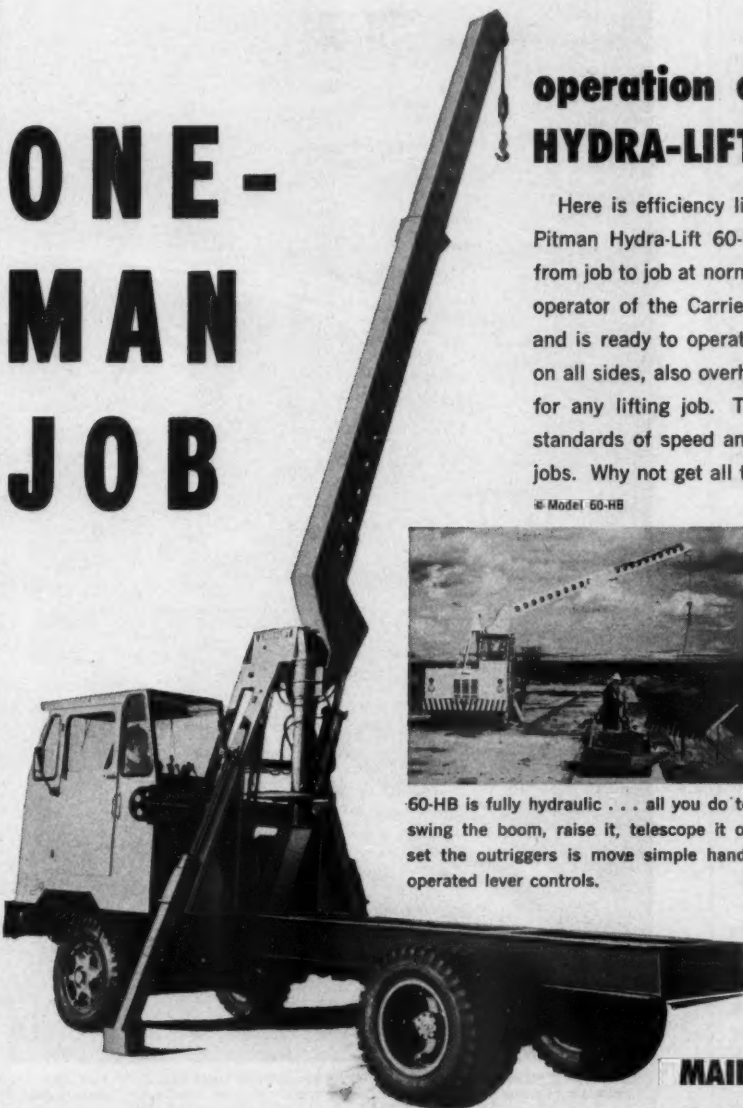
MARCH, 1959

CONSTRUCTION MACHINERY SALES

"I don't know why you hesitate to sell me equipment on credit."



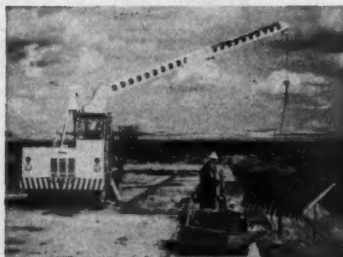
ONE-MAN JOB



operation of Pitman HYDRA-LIFT* and CARRIER

Here is efficiency like you've never seen before. A Pitman Hydra-Lift 60-HB on a Pitman Carrier moves from job to job at normal truck speeds. On the job, the operator of the Carrier turns around in a swivel seat and is ready to operate the Hydra-Lift. Wide windows on all sides, also overhead, give him excellent visibility for any lifting job. This unit is setting entirely new standards of speed and efficiency on dozens of lifting jobs. Why not get all the facts today!

* Model 60-HB



60-HB is fully hydraulic . . . all you do to swing the boom, raise it, telescope it or set the outriggers is move simple hand-operated lever controls.



60-HB on a Pitman Carrier lifts up to 7,000 lbs., boom telescopes from 17' to 27'...yet a full 12 ft. of space remains behind Hydra-Lift for hauling purposes.

MAIL THIS COUPON TODAY

Pitman also manufactures Hydra-Lifts . . .

• Model 50

• Model 60

• Pitman Aerial Platform

Model 60-HB for installation on your truck

Please send me full details on 60-HB and Pitman Carrier. ☐
I would also like a demonstration. ☐

Name _____

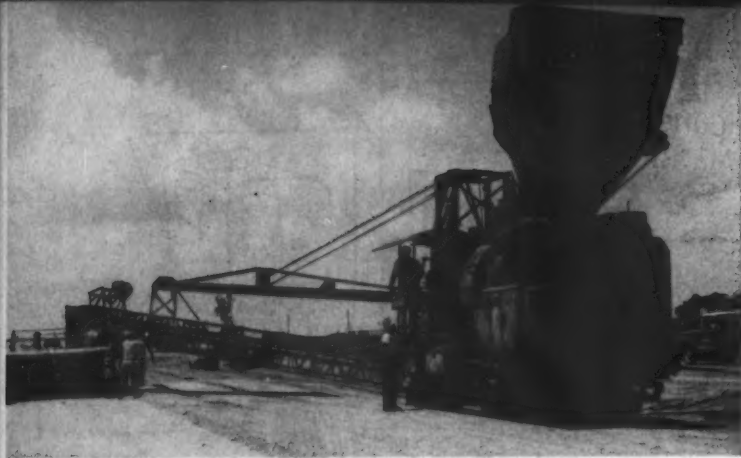
Company _____

Street _____

State _____ City _____

Pitman MANUFACTURING COMPANY
Grandview, Missouri

For more facts, use coupon or Request Card at page 18 and circle No. 281



Heavy equipment is kept from rutting the subbase of one of the AASHO Road Test loops through the use of a special method for placing crushed-limestone base. The batches are dumped to a Koehring 34-E, which operates on the outside shoulder. After being mixed, the material goes onto a 45-foot-long conveyor leading to a B-K spreader. The paver bucket was removed and the boom given added support by cables for this operation.

Special tricks used by contractors paving the \$2 million AASHO Road Test near Ottawa, Ill., worked so well on the job that they might be considered tried-and-true methods for contractors facing similar tight specs.

In the six loops of the Road Test, which occupies a stretch about eight miles long, are four main loops with 6,500-foot tangent sections. Lanes are connected at the ends by banked turn-arounds. One of the two smaller loops is for testing the effects of single-axle loads; the other loop, not subject to traffic, is for testing strain and the effects of weathering. About half the pavement is asphalt and half concrete; the concrete varies from 2½ to 12½ inches, the asphalt from 1 to 6 inches.

The asphaltic-concrete surfacing is, in some cases, placed directly on the earth embankment. Most of the test sections, however, have crushed-stone base and/or sand-gravel subbase of varying thicknesses. Some of the portland-cement concrete slabs are placed directly on the embankment, while others are placed on sand-gravel subbase ranging up to 9 inches thick. The embankment throughout the job consists of 3 feet of uniformly compacted earth.

S. J. Groves & Co., Springfield, and Arcole Midwest Corp., Skokie, Ill., handled the earthwork for the project. (See "Contractors Meet Challenge of Building AASHO Test Road," C&E, January, 1958, page 6.) Groves also handled the \$5.7 million paving contract, subbing the asphalt paving to Rock Road Construction Co., Chi-

cago. Paving controls were tight and inspection rigid. For accurate comparisons between different thicknesses of pavement, the pavement in all the test sections had to be of uniform quality, and the pavement within each section had to be held at a constant thickness.

At the Blaw-Knox batch plant, special controls were set up to insure constant quality of the batches.

The moisture content and gradation of the stockpiles were frequently checked. The controls on the weigh buckets were manual, and an inspector always kept his eyes on the scales.

Specifications required that a front-end loader be used to feed the batch plant so that a better sampling of stockpile materials was obtained. A Hough Model HH Payloader buzzed



INTERCHANGE NEARING COMPLETION. Note the efficient short haul of materials from batching plant, set up inside one circle of the clover-

leaf. Note variations in pavement width, flaring from 12' to 17' and curves were super-elevated to maximum 16" in 16'.

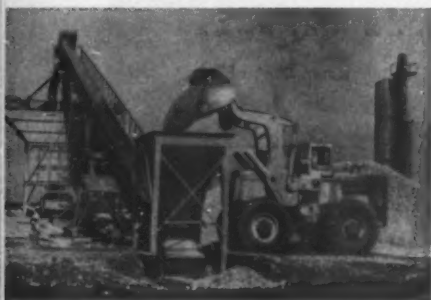
NEW TYPE JAEGER SPREADER SAVES \$400 TO \$450 A DAY ON U. S. 30 INTERCHANGE

Hydraulic self-widening and diagonal screed solve problems of placing flared and super-elevated slab

On this interchange of U. S. 30 East and State Route 1, near Mansfield, Ohio, V. N. Holderman Paving, Inc. set up for a daily production of 500 paver batches of 1.38 cu. yds.

But, because slab width varied from 12' to 17' and curves were super-elevated to 16" in 16', it took 10 hour shifts to place this production, even with two finishing machines and a large crew.

SPREADER SAVES 2 HOURS: Introducing a new Jaeger JSX all-hydraulic self-widening spreader immediately behind the paver solved both problems. Width changes from 12' to 17' were made with the touch of a lever. On the super-elevated curves, concrete was cast spread up-hill by the Jaeger helical screw and the diagonally adjustable oscillating screed which makes a precision strike-off and also insures solid compaction against



Specifications called for a front-end loader to feed the aggregate bins of the batch plant so that a more uniform sampling of materials was obtained. The job is handled by a Hough Model HH Payloader.

Develop to meet tight spex on AASHO Road Test

from the four stockpiles to the low-level bin that fed the conveyor to the plant. The fast-moving rig handled up to 2,380 tons in 8½ hours.

A uniform quality of cement was insured, since the portland cement came from the production of one burning and grinding, and was stored in a separate silo. It was batched to the trucks from a Blaw-Knox double batcher with manual controls.

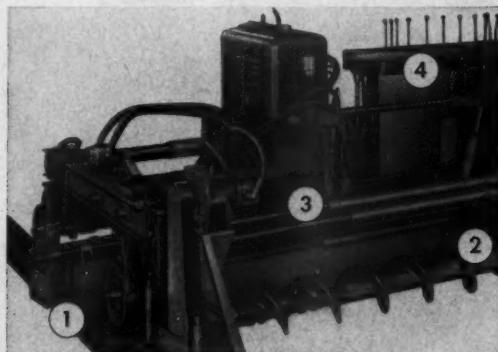
Concrete paving train

A considerable amount of care was taken to get the sand-gravel base within ½ inch of grade in preparation for the paving. Forms were checked for elevation after the sub-grader passed, and before and after the paving train passed.

At 20-minute intervals, a crew of inspectors made sure that the air content of the concrete was within

the higher form. As a result, Holderman met the 500 batch schedule in 8 hours instead of 10, saving two hours (\$400 to \$450) daily overtime. They also saved 4 to 6 shovels previously needed for carryback.

OFTEN SAVES SECOND FINISHER: On any work where specifications permit, use of the JSX spreader, with its accurate 12" oscillating screed, also eliminates the need for a second finishing machine.



12'-18' JAEGER ALL-HYDRAULIC SELF-WIDENING SPREADER

1: ADJUSTABLE STRIKE-OFF, PLUS 12" OSCILLATING METERING SCREED DIAGONALLY ADJUSTABLE to lay up-hill on pitched and super-elevated slab.

2: INDEPENDENT RIGHT-AND-LEFT SPREADING SCREWS positively remix, spread, density. No other spreader has them.

3: 8' OF INFINITE WIDTH ADJUSTABILITY by hydraulic power, operating telescopic frame and spreading screws. Simple screw flights and screed extensions with infinitely adjustable screed end-shoes.

4: EVERY FUNCTION HYDRAULICALLY POWERED and lever controlled — no mechanical transmissions.

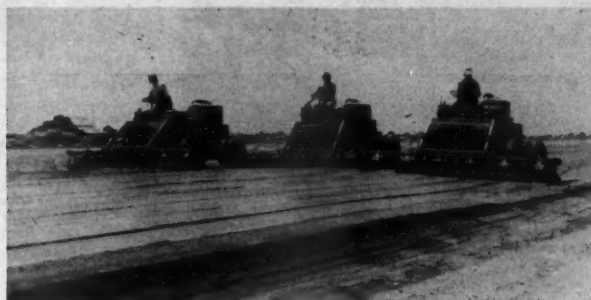
Make money with a Jaeger JSX (diagonal screed) or JSH (transverse screed) spreader on your work. Ask your Jaeger distributor or send for Catalog JSP9.

THE JAEGER MACHINE COMPANY

701 Dublin Avenue, Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

BELOW: Jaeger Type JSX spreading base course with dual screws. Adjustable plate makes rough strike-off for reinforcing mesh. On second pass, spreader lays top course, strikes it off, then makes precision metering strike-off with its oscillating 12" screed. Hydraulic power swings the screed to any angle needed to work material up-hill on pitched or super-elevated slab — eliminating carry-back.



Three Jackson vibrating pan-type tampers compact the sand-gravel base to strict specifications. The tampers make a specified number of passes to obtain 100 to 105 per cent of maximum compaction in the base.

3 to 6 per cent, that the slump was held between 1½ and 2½ inches, and that the wet density met the strict specifications. Two beams and two cylinders were made for every 120 feet of pavement. The position of each batch was spotted in the pavement to provide a complete record of the paving.

The two paving trains on the job were identical. A Koehring 34-E paver was used to dump concrete in front of a Jaeger spreader equipped with three vibrators. The spreader was followed closely by a Jaeger transverse finisher, a Koehring longitudinal float, a belting machine, and a burlap drag. To make sure that all the concrete was processed in a constant manner, crews had to keep the individual units in the train within 50 feet of one another.

The finished surface was covered with a double layer of wet burlap for 24 hours. After the burlap was removed, the concrete was covered with 8 inches of wet straw for a minimum of five days.

Transverse joints were sawed at 15-foot intervals for the nonreinforced concrete, and at 40-foot intervals for the reinforced concrete. A Jointmaster Concut saw rig, which rode the rails, made the ¾ to 2½-inch-deep cuts. The 4-blade rig buzzed across the 24-foot-wide pavement in as little as 40 seconds.

Asphaltic concrete

In working on the asphalt paving, Rock Road Construction Co. had to keep the haul trucks off the base of the roadway. The specification was



This midget roller, a Rollpac ½-ton machine driven by a 1-cylinder gasoline engine, compacts shoulder material.



For more facts, use Request Card at page 18 and circle No. 282



Careful control is maintained as the concrete is struck off by a Jaeger spreader. Inspectors check at 20-minute intervals to make sure air content is within 3 to 6 per cent and slump between 1½ and 2½ inches.



A Jointmaster rig takes 40 seconds to make a transverse joint in the 24-foot-wide concrete. The saw carriage is hydraulically raised and lowered. Joints are ¾ to 2½ inches deep.



Rough going? You bet! That's why Thiele Kaolin Company specified a torque converter drive in this Allis-Chalmers HD-16 Tractor.

"Our HD-16 with torque converter drive keeps going on the roughest jobs!"

says Owen Robinson, Mine Superintendent, Thiele Kaolin Company

"We believe our torque converter equipped Allis-Chalmers HD-16 Tractor is the *best*," states Mr. Robinson. "Kaolin, the white clay used in making paper, can really bog down ordinary machines, but not so with the HD-16. Besides, we get 25 per cent more work out of a torque converter equipped machine compared to a conventional drive tractor operating under equal conditions."

Owners, superintendent and operators know that Mr. Robinson's words are very much to the point. Torque converter drives in crawler tractors speed work and save operating costs. Without equal in push-loading (by matching tractor speed to that of the scraper), torque converter equipped

tractors excel in other service as well by permitting the engine to operate in its most efficient speed range at all times. The torque converter matches power automatically to load demands . . . providing up to 6:1 torque multiplication (Twin Disc Three-Stage) when required. Heavy load pick-up is smooth and even without clutch slip-page . . . for better over-all flotation. And the operator can put in a good day's work and still feel like an evening out!

Allis-Chalmers offers a torque converter as optional on the HD-16 and as standard equipment on the bigger HD-21. And all three leading crawler tractor manufacturers, including Allis-Chalmers, standardize on Twin

Disc Torque Converter components for their torque converter equipped machines.

Be sure to specify a torque converter in your next machine. See for yourself how a torque converter cuts costs, brings in big profits.



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division) Rockford, Illinois

For more facts, use Request Card at page 18 and circle No. 283

(Continued from preceding page)

designed to prevent rutting of the base and disturbance of the carefully controlled compaction.

To solve the problem, the contractor used a Gradall to unload the haul trucks from the shoulder and swing the hot-mix to the finisher on the roadway. For this specialized work, the Gradall was equipped with a loader-type bucket.

The Barber-Greene finishers were modified to meet specifications; tracks were lengthened by 28 inches to reduce pressure on the rock base.

An electric guide device on the finisher permitted the surface of the mat to be laid within ¼ inch. The guide device, attached to the screed, was made up of two steel fingers, ¼ inch apart, that straddled a wire grade line.

Normally, two finishing machines operated as a pair, laying 12-foot widths of binder and surface courses. One machine worked on a half-width, while the other machine was being placed for the other half. This eliminated much of the delay of moving. The hot-mix was compacted first by Gallon 7 to 11-ton 3-wheel rollers, then by Ferguson 25-ton 11-wheel pneumatic rollers, and finally by Gallon 8 to 12-ton tandems. The weights on the rollers were carefully adjusted in a pilot section so that the specified density was obtained.

Asphalt plants

Two Barber-Greene plants produced the closely graded, highly uniform asphaltic concrete. The binder course was produced by a Batchomatic Model 894 plant. The big plant, rated at 120 tph, dropped 4,000-pound batches to the haul trucks.

To meet specifications, the plant was equipped with two large dryers in tandem. The double dryers were to insure adequate drying of wet



The rock base is compacted from 100 to 105 per cent of maximum dry density by a Gallon 3-wheel, 7 to 10-ton roller.

CONTRACTORS AND ENGINEERS



Since haul trucks had to be kept off the roadway base, a Gradall was used to transfer hot-mix to the Barber-Greene finisher. Finisher tracks were lengthened by 28 inches to reduce pressure on the rock base.

stockpile materials. Each dryer had a cyclone-type dust collector.

The four different sizes of aggregate were fed to the dryers by a 4-bin cold feeder that was stocked by a crane. The screens above the main plant split the aggregate into the four hot-feeder bins.

A continuous Barber-Greene plant, rated at 160 tph, produced the surface course for the test sections. It, too, was equipped with a double dryer and two dust collectors. The cold feed was controlled by four feeder bins, and there was a 4-bin split in the plant.

Placing rock base

In placing the crushed-limestone base, the contractor was faced with the problem of keeping the trucks off the subbase. To meet specifications, he also had to batch out the three sizes of rock comprising the base, as well as add the optimum amount of moisture for compaction.

A modified Koehring 34-E paver, riding on the shoulder, mixed and added water to batches of base material. The paver, with its bucket removed, dropped the material onto a 45-foot conveyor belt that led to a Blaw-Knox self-propelled spreader. The conveyor belt was supported by the paver boom, as well as by cables from a shop-made tower on top of the mixer. This arrangement permitted the conveyor to swing.

All the methods developed to meet the tough specifications worked out well; the road, completed to design standards, is now carrying trucks, ranging in size from pickups to large semitrailers, on a 2-year journey that will last 18 hours a day, 6 days a week. The trucks will get nowhere, but test-road engineers will collect a library of information about the behavior of the pavement under known axle loads.

THE END

Tarpaulin group formed

Representatives from 16 of the leading tarpaulin manufacturers in the country have formed the Tarpaulin Manufacturers Association to establish quality standards, enforce Federal Trade Commission rules, adopt a buyers' guide and guarantee, and promote the tarpaulin industry.

The association elected Robert T. Goldberg president, C. G. Mack vice president, and Sam Brown secretary-treasurer.

MARCH, 1959

Course in management commences this month

A 6-month training course in construction management has been established at the Welser, Idaho, school of the National Schools of Heavy Equipment Operation. It is based on the training course in project management and supervision by George E. Deatherage, construction consultant, whose articles on management are a monthly feature of **CONTRACTORS AND ENGINEERS**.

Entrance requirements for the course are: a high school diploma

showing 1 year each of algebra and geometry, plus 2 years' work in the construction industry; or 2 years of business, science, or engineering in college; and a minimum age of 21. The first class, limited to 20 men, will assemble on March 30. A resident course is also planned for a later date at the Charlotte, N. C., school.

For men unable to attend the 6-month resident school, the course is also offered as mail-extension training by both schools.



To prepare new crushers for a hard life, Wasco County, Oregon, hard-faces rollers with Victor alloy rod. The rollers showed no discernible wear after crushing 3100 tons of extremely hard and abrasive basalt.

Lifesaver for new or used equipment

VICTOR

Hardfacing Alloys

Wasco County, Oregon, uses lots of crushed basalt. This rock crushes readily, yet is extremely hard and highly abrasive, consequently tough on rollers. So, as standard practice, Supt. Wayne Weeks hardfaces all rollers in brand new crushers, before ever they crush a single basalt rock. He reports hardfacing of new equipment prevents excessive wear of surface material, thus maintaining roller size during the work hardening period.

On this new crusher, he used 200 lbs. of Victor #0 semi-automatic wire, size 7/64", to hardface roller faces, and 50 lbs. of

tube Victorite coated for finish work around the roller edges. Longer crushing life will quickly pay for the rod.

You, too, can save money and extend the life of equipment subjected to abrasion, impact and heat. Simply make it standard practice to hardface both new and worn equipment with Victor alloy rods. Complete line of 27 different hardfacing rods assures you a right rod for every hardfacing need. Full range of sizes for both acetylene and electric AC and DC applications, either hand, automatic or semi-automatic. Order a supply from your Victor dealer TODAY.

FREE Victor Hardfacing Manual shows you right rod to use and how to apply it. Write us NOW for your copy.



Profitable dealerships open; inquire now!

VICTOR EQUIPMENT COMPANY

42

ALLOY ROD AND METAL DIVISION

13808 E. Imperial Highway, Norwalk, Calif. • Wakita, Oklahoma

For more facts, use Request Card at page 18 and circle No. 284



Figure 1. Hand-driving a probe with a slip weight.

Subsurface information obtained with a probe or rod sounding is very limited. But such investigations are quick and easy to make and have a definite application in some areas. Hand probing is particularly useful for seeking out rock profiles, boulders, or hardpan layers. In areas where soil conditions are homogeneous and the investigator has had a considerable amount of probing experience, a simple chart can be made up to correlate the number of blows per foot of advance with a standard probe and hammer to known subsurface layers, Figure 1.

The hand-operated probe, Figure 2, is a hardened steel conical point that can be attached to drill rods like those used with Iwan, ship, and other augers. An SAE alloy-steel drive head is screwed to the top of the rod, and the point is driven into the earth with a 12 or 16-pound sledge hammer.

Sometimes, a guide and 35-pound hand weight are provided for driving. The blows per foot of penetration are measured with this device and the results used as a rough check on the bearing capacity of the soil. When an architect specifies a deep trench across a building site, this probe, or penetrometer as it is sometimes called, is used to check to additional depths of 6, 8, or 10 feet below the bottom of the excavation.

The penetrometer, Figure 3, is for use with E, A, or B-size drill rods.



Figure 2. Hardened-steel probing point.

Basic procedures of soil sampling

Probing, boring, and exploring

It consists of an adapter for coupling drill rod to the drive point, an expendable hardened-steel drive point, and a drive head with guide. It is used to depths beyond the capacity of hand equipment and is driven with either a 250, 300, or 350-pound drive weight operated by a power winch. The expendable steel drive point cuts out clearance for the drill

rod so that when the probing has been carried to refusal or to the desired elevation, the rods can be withdrawn easily without frictional drag. The expendable drive point remains in the ground, and a new one is fitted to the assembly for the next hole.

Wash boring

The term "wash boring" applied to

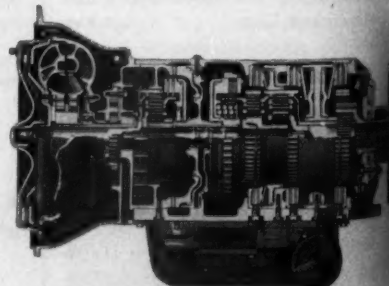
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CONTRACTORS AND ENGINEERS

lorior general surveys

by WILLIAM L. ACKER, president,
Acker Drill Co., Scranton, Pa.

preliminary soil-survey work means the jetting of a hole with a stream of water under pressure. It is a fast and simple process for recovering a minimum amount of general information about subsurface conditions. In the early days of soil sampling, wash boring was popular and considered a valid technique. While it is still used, it is limited to certain

locations, and results are examined with caution. It is a fast and inexpensive technique, useful for obtaining a general idea of subsurface conditions. In this type of work, the casing is driven with a drop weight until it cannot go any further. Then, water under pressure is used to remove accumulated debris and dirt from inside the casing. In shallow or

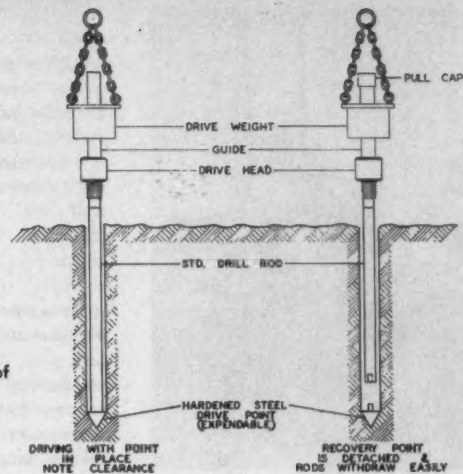


Figure 3. Operation of Acker penetrometer.

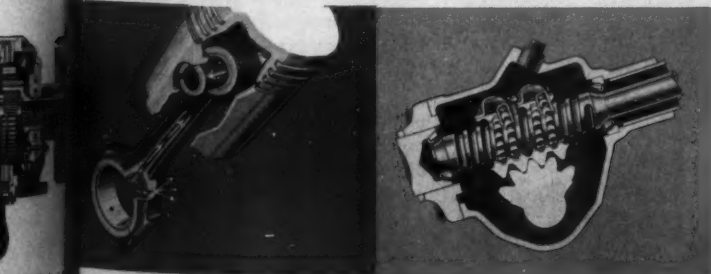
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simple borings, the water is supplied by a hand pump or centrifugal pump. On deeper holes, or when core drilling must be done, a positive displacement pump is essential. A water swivel directs the water through the string of drill rods or wash pipe, where it is finally discharged through the chopping bit.

The drill rods and bit are alternately raised and dropped. As they are dropped, they are turned by hand to break up the material in the casing. Material washed to the surface is led off through a tee at the top of the pipe, where it can be caught for a sample. This procedure is continued until the casing is cleaned to the bottom. If only wash borings are involved, the chopping and jetting process may continue considerably below the casing or pipe until the hole begins to cave, necessitating additional driving of the casing. If representative or undisturbed samples must be recovered, the jetting tools are removed when the bottom of the pipe is cleaned and appropriate sampling tools inserted.

In pure wash boring it is not necessary to remove the chopping string to drive the pipe. It is pulled back and "hung" in the hole while the casing is driven ahead. The saving in time and expense is obvious, and in many cases pure wash borings suffice for the preliminary survey. Use of casing maintains an open hole, and allows the bore to be continued to depths beyond the point where it would cave in. The actual hole itself is deepened by jetting with a stream of water under pressure, furnished by the pump. As the water erodes the soil at the bottom of the hole, cuttings are washed to the surface and caught in a receptacle. These cuttings are caught from time to time, decanted, and preserved as "wash samples." The speed with which the water jets through the different strata, plus changes in the color of wash water, will make sense to the observant investigator. There is, of course, a lag between strata changes and the time it is noticed on the surface.

Although "wash sampling" has gone out of vogue as a means of recovering specific information, the method is widely used as a means of making hole for "dry" and "undisturbed" sampling. In areas in the

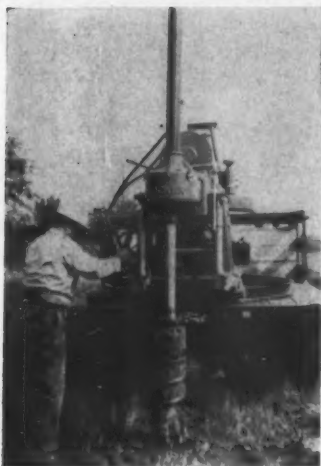


Figure 4. Typical truck-mounted power auger.

This is the second of a three-part series on basic procedures of soil sampling. It is intended as a simple guide to the builder or contractor desiring fundamental information about currently accepted methods, procedures, and tools for soil sampling. The articles deal only with securing of the sample, not with laboratory analysis.

(Continued from preceding page)

world where labor is cheap, repair facilities limited, and communications poor, the hand sampling rig is still popular and the tools used are standard drill tools.

Equipment needed for wash boring can be hand or power-operated. A hand-operated outfit is useful for general-survey work where the ter-

rain is rugged and deep drilling is not needed. A centrifugal pump can be substituted for a hand pump. Power-operated wash-boring equipment is usually fairly compact and maneuverable. It always includes a mast, a cathead hoist, and a water-circulating pump. Inclusion of a rotary drillhead is optional,

Power auger borings

One of the fastest methods of conducting a preliminary survey involves the use of a power auger. This is particularly true when the section to be investigated covers a wide area, as in the case of a highway or thoroughway. Most power augers, such as the one in Figure 4, are mounted on trucks or tracked vehicles to provide a high degree of mobility. The simplest power auger, Figure 5, is held by hand. It is useful for very shallow testing.

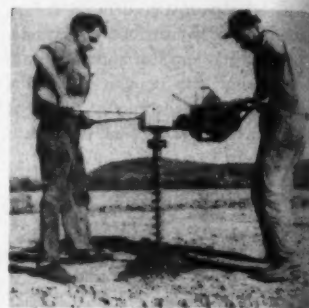


Figure 5. Smallest power auger.

Sampling with an auger drill can be done in any one of three ways. Figure 6 shows a large single-flight cutterhead mounted on the spindle of the machine. The cutterhead is used to make repeated fast passes in and out of a hole limited only by the travel of the auger spindle. (Eight to 15-foot spindle lengths are common.) For this kind of augering, cutters 9 to 24 inches in diameter are used.

In most soils that can be penetrated and that are self-supporting, a 15-foot hole can be augered in 10 to 15 minutes. Since the hole is continuously cleaned as it is dug, each cutter full of soil represents an accurate, although highly disturbed, sample, from a definitely fixed elevation. Caving in from the walls provides some contamination, but in most cases this is no problem.

Sometimes, for this type of sampling, the digging head is removed from the drill spindle after the hole has been bored to a given depth. Then, a special auger-type sampler is attached to the spindle to obtain a better sample. Figure 7 shows three different types of auger samplers. All of the heads shown can be used right from the start of the hole. An important advantage of being able to sample with a single cutterhead is the fact that the amount of tools and equipment can be kept to a minimum. Also, the sample recovered is from a definite known elevation. A few different types of cutters with spare cutter teeth and shoes will suffice.

It is wise to remember that this method of sampling is limited in depth unless the terrain permits use of heavy equipment. Caving in of side walls when augering through certain soils also causes problems.

Continuous-flight augers

Continuous-flight augers, which maintain an open hole and eliminate cave-ins, can be used to depths of 100 feet or more, depending on equip-

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Figure 6. Auger with single-flight cutterhead.

ment used and conditions encountered. However, all augering is useless when a flowing sand or highly plastic clay is encountered below the water table.

Figure 8 gives a clear picture of how continuous flights are used with an auger drill. A cutterhead is attached to the leading section of the flights and cuts approximately a 1-inch clearance for the flights that follow. The flights, in turn, act as a screw conveyor, bringing cuttings to the top of the hole, where they are shoveled or cleared to one side. As one flight section bores into the earth, another section is added. This procedure is followed until the hole is completed. Flights are added in 3, 3½, and 5-foot-long sections. The most popular diameter for soil-sampling work is 5½ inches outside diameter, although flights with 4 and 6½-inch diameters are also used.

The 5½-inch size makes it possible to insert 4-inch extra-heavy drive casing in the auger hole whenever it becomes necessary to discontinue augering and change to conventional boring. In abrasive soils, it is advisable to harden the surface of the flights. Extra-hard metal is applied directly to the outer edges of the flights. For most purposes, a "square" pitch will be satisfactory for continuous-flight augers.

Many types of cutterheads

There is a wide variety of cutterheads on the market, but most types of augering can be done with the three shown in Figure 9. The fishtail cutterhead is for clay and cohesive material. The finger-type cutterhead

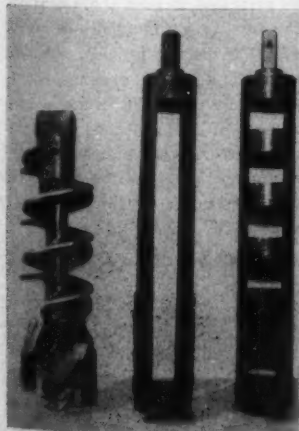


Figure 7. Three types of sampling devices used directly on auger spindle.

is for general-purpose digging. The carbide-type cutterhead is for hardpan or tightly consolidated deposits.

An auger is not a rock cutter, but with the use of carbide bits, it can penetrate some of the softer shales and sandstones. As with the cutters that work directly on the drill spindle, all but the fishtail cutterhead have replaceable teeth.

The bit is about an inch bigger in diameter than the auger-flight diameter. A 4-inch auger will take a 4¾-inch bit, while a 6½-inch auger uses a 7½-inch bit.

Soil samples can be recovered by two methods when augering with continuous flights. Samples can either be recovered from the cuttings arriving at the top of the hole—and

this is a very rough and spotty check—or they can be obtained by pulling the flights out of the hole and taking a sample from the material adhering directly to the flights. This method is best, but again it is not positive.

Successful sampling depends on the operator. If he cleans the hole thoroughly and loads the flights quickly before pulling, the chances are that the sample will be fairly accurate. But it must always be remembered that this method is still a preliminary survey.

When more detailed information is required, and if time and money are available for more involved samples, a split spoon or Shelby tube sampler can be inserted into the hole once the augers are withdrawn, providing,



Figure 8. Continuous-flight augers removed in one string.

(Continued on next page)

Spicer Drive Lines Get Specified For The Toughest Jobs

This self-propelled oil field vehicle is designed for top dependability in some of the roughest, toughest work you'll find. Loads are heavy, often excessive. Dirt and grit are always present, and the equipment must be ready for prolonged and uninterrupted service any time of the night or day.

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The vehicle shown is one of a type manufactured by Fred E. Cooper, Inc., of Tulsa, Oklahoma, employing Spicer Series 1700 heavy-duty drive shafts. Cooper also builds a line of skid units using dependable Spicer transmissions.



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(Continued from preceding page)

of course, that the hole remains open. Although augers cannot be used in all types of soil and the sample obtained is disturbed, they are fast and inexpensive to operate. Presently, they are carving a wider and wider niche in the field of soils testing.

Aside from soil sampling, earth augers are useful for prospecting, setting guardrails and utility poles, drain holes, etc.

Geophysical exploration

Geophysical methods of exploration depend on the measurement of a given characteristic of the soil, such as electrical resistivity, gravitational or magnetic field, or conductivity of sound or shock waves.

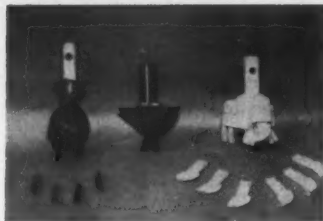


Figure 9. Three different cutterheads for continuous-flight augers.

Changes in soil conditions or outline of rock profiles are actually determined by measuring the changes in these characteristics. With these methods, no actual boring or drilling is done, and equipment used is highly portable; a fast survey can be made with it over a wide area.

At the same time, the results achieved are of a very general nature and not suitable for actual design.

The two most popular methods are the seismic method and the resistivity method. Under the first, small charges are set off at the surface and sound or shock waves picked up and timed at distance intervals from the point of the explosion. In some cases, a shock wave is set up with a hammer blow or sharp percussive effect.

This is particularly effective for tracing out rock profiles, since the percussive wave travels about four times as fast in rock as in overburden. Primary waves set up by the shot enter rock and race ahead, sending back a refracted wave that will at some point reach the surface pickup

unit at the same time as the primary wave. Beyond this point, refracted waves arrive first and, by plotting time in milliseconds against distance in feet, it is possible to locate the point of intersection. With this point known, the depth to bedrock can be determined.

The electrical resistivity method is based on the measurement and recording of changes in electrical conductance of various soils. This is done by driving electrodes into the ground and imposing an electrical field. The drop in potential is then measured at points within this field and given an indication of soil resistivity.

The value of both of these methods is in their application to wide areas and large surveys. In both cases, the usefulness of information recovered is greatly increased by occasional borings to provide an actual check on results and to help in their proper interpretation.

(Next month's installment will deal with "Detailed Explorations.")

Northwest Schools offers extension-resident course for operating engineers

A course for operating engineers has been added to the curriculum of Northwest Schools, Inc., Portland, Ore. Designed for preparatory home study, with a finishing resident phase of practical equipment training, the program is for individuals preparing to enter the heavy-equipment-operation crafts, as well as for those who wish to broaden the foundation of their basic theory and technical experience.

The course covers a thorough study of heavy equipment and its operation, engineering fundamentals of earthmoving, grade and grade stakes, principles of highway construction, field operation, and maintenance. The extension phase consists of 31 home-study lessons, supervised by mail by professional instructors. The resident phase is made up of 60 hours of resident training in Portland. This phase is for practical heavy-equipment training and specialization in one and not more than two machines.

To be eligible for resident training, the student must complete the 31 home-study lessons with passing grades of 70 per cent or higher; must have paid tuition in full; and must be in good physical condition. Classes are arranged so that the number of students attending may be small enough to permit personal attention and training on the actual equipment. Tuition for the course is \$400 in cash, or \$495 on time. More information may be obtained by writing to the school at 1221 N. W. 21st Ave., Portland 9, Ore.

Laclede Steel promotes

Edgar J. Griesbaum has been appointed sales manager of tubular products for Laclede Steel Co., St. Louis, Mo. He succeeds E. J. Winter, who is retiring. Griesbaum, with the firm for the past 23 years, was formerly district sales manager.

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Reo's truck lineup for 1959 offers several innovations

Featured components in the Reo line for 1959 include a new 6-cylinder heavy-duty engine, the Model O. H. 185; a new and lighter flywheel power-takeoff drive for mixers; an adaptation of airplane tires for truck use over adverse terrain; and an axle and suspension combination said to permit maximum payload and maneuverability in rugged work.

The 185-hp engine is suited to hauling in the 55,000-pound gw range and offers extra performance and operational ease in tandem work, according to the manufacturer.

The power takeoff is located at the rear of the engine, ahead of the transmission, eliminating the need for body and bumper modifications often required in a front-drive arrangement.

Reo's versatile lineup of medium and heavy-duty trucks includes vehicles in the 18,500 to 52,000-pound gw class, as well as tractors in the 42,000 to 78,000-pound gw class.

For further information write to the Reo Division, The White Motor Co., Dept. C&E, Washington Ave., Lansing, Mich., or use the Request Card at page 18. Circle No. 89.

Grader weighs 29,000 pounds, is rated at 150 horsepower

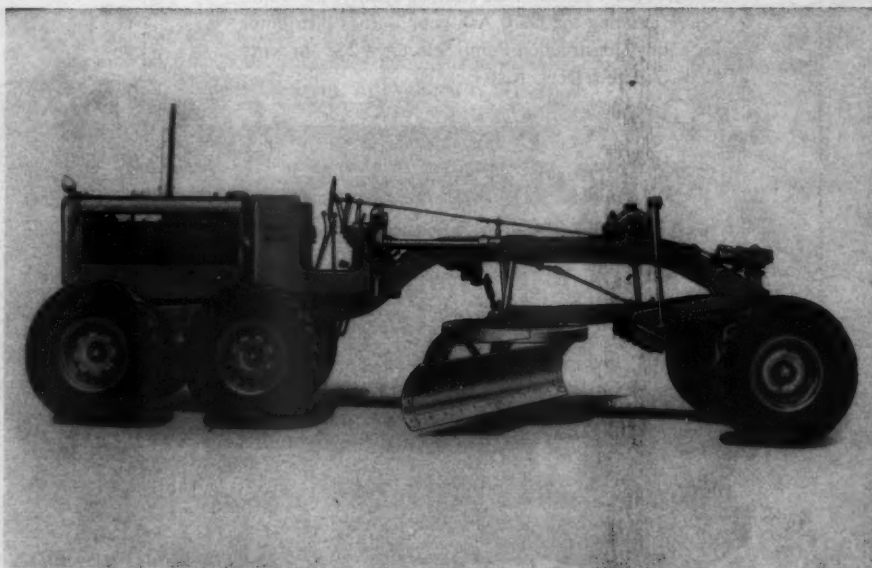
The No. 14 motor grader, rated at 150 horsepower and weighing more than 29,000 pounds, is announced by the Caterpillar Tractor Co.

The use of 10.00-inch rims for the 14.00 x 24 tires provides a wide rim base, thus straightening side walls and reducing any side-rolling tendencies. Height of the 12-foot moldboard is 27 inches.

Power for this Series B motor grader is provided by a turbo-charged engine rated at 150 horsepower and offering an 18 per cent torque rise. The transmission provides six forward and two reverse speeds. Forward travel speeds range from 2.6 mph in first gear to 21.6 mph in sixth.

Vertical lift of the blade is 17 1/4 inches, with a circle side shift of 71 1/4 inches to the right and 40 1/4 inches to the left. Maximum bank cutting angle is 90 degrees.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 84.





Powered by a 4-cylinder diesel engine, the Allis-Chalmers Model 145 motor grader has 6 forward speeds ranging up to 20.3 mph and 3 reverse speeds up to 7 mph.

Add 80-hp machine to motor-grader line

The Allis-Chalmers Mfg. Co. announces the Model 145 motor grader. This 21,540-pound unit is powered by a 4-cylinder diesel engine that develops 80 horsepower at 1,800 rpm. It has 6 forward speeds ranging up to 20.3 mph and 3 reverse speeds up to 7 mph.

A major feature of the Model 145 is the 90-degree maximum bank-cutting capability of its 12-foot moldboard for backsloping highway cuts and for ditch construction. In addition, a wide shoulder reach outside the front wheels aids the unit in such

work as grading soft highway shoulders. The machine's power-actuated, fully reversible circle turn is also stressed by the manufacturer.

Power-operated, leaning front wheels and a full 6,500 pounds of weight on the front axle give the Model 145 extra resistance to the side thrust of big moldboard loads, and provide added front-end stability.

Special equipment available for the Model 145 includes power hydraulic steering, hydraulic shiftable moldboard, heavy-duty scarifier, V-type snowplow and wing, and a range of special tire options.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 25.

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In your business, the chief test of any pump is in the years of continuous, low-cost operation it delivers. That is where Barnes self-primers stand out because every model is proved in our Blue Ribbon Quality Test Booth before entering the field! Ask your Barnes distributor for handy Construction Pump Selector #238—or write to us. Address Dept. B-39.



Barnes Electric Driven Centrifugal Pumps

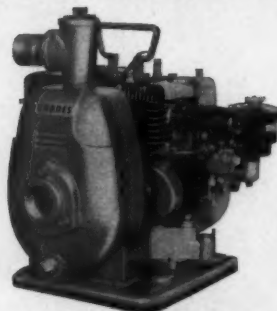


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Barnes Engine Driven "Lightweight" Pumps



Barnes Universal Drive Centrifugal Pumps

Expand screed line to 30-foot lengths

The Thor Power Tool Co.'s construction-equipment division has expanded its line of StraPaction vibratory concrete finishing screeds to include 16 to 30-foot lengths. The screeds, which strike off, vibrate, compact, and finish concrete in one pass, now are available in standard lengths from 4 to 30 feet, in 1-foot multiples.

The basic screed design utilizes two wooden beams and cross supports, with a series of vibratory steel straps attached parallel to the beams beneath this framework. High-frequency slapping action of the straps forces water and air rapidly out of the concrete, enabling two men to produce a dense, compact hard surface in minutes.

Power for the new 16 to 30-foot screeds is furnished by a 3-hp gasoline engine atop the screed frame.

For further information write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 47.



New tension cables, housing, and strike-off plate can be seen on this 30-foot Thor StraPaction vibratory finishing screed.

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- Retains the widely-accepted characteristics and performance features of the 120-hp Allis-Chalmers FORTY FIVE grader.
- Offers the best combination of operator features of any grader near its size.



Operator advantages no other medium-priced grader can give you . . . "wide-open" visibility . . . over-the-circle lift cases . . . suspended pedals and exclusive no-kick, toggle-type controls.

Power for high production. Husky, high-torque Allis-Chalmers diesel engine handles overloads without shifting down . . . geared for good range of travel and working speeds.

Load-handling ability second to none. The new ONE FORTY

FIVE has a 26½-inch-high arched front axle—and highest throat clearance in its class. You get more dirt to the ROLL-AWAY mold-board and move it with efficient rolling action that uses less power.

See the new ONE FORTY FIVE motor grader at your Allis-Chalmers dealer's. Check its dollar-saving price. Then check its 80 hp and 21,540 lb on an actual demonstration. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ROLL-AWAY is an Allis-Chalmers trademark.

... Another outstanding motor grader joins the Allis-Chalmers line
the ONE FORTY FIVE

		
MODEL D 58-hp Allis-Chalmers engine 8,800 to 11,450 lb	ONE FORTY FIVE 80-hp Allis-Chalmers engine 21,540 lb	FORTY FIVE 120-hp Allis-Chalmers engine 23,800 lb



move ahead with **ALLIS-CHALMERS**.....power for a growing world

For more facts, use Request Card at page 18 and circle No. 290

MARCH, 1959

113



This new crane, which will reach 140 feet with jib, has a boom made of Tri-Ten steel featuring extra-strong chord angles and larger cross sections. Point sheaves are mounted on presealed, permanently lubricated antifriction bearings.

Transit crane features 45-ton lifting capacity

A new transit crane, designed to lift a maximum load of 45 tons with a 40-foot boom at a radius of 15 feet, is announced by the Bucyrus-Erie Co.

Designated Model 30-B, the machine can be used as a 1 to 1½-yard hoe, 1 to 1¼-yard shovel, 1 to 1½-yard dragline, and as a clamshell. It has a reach of 140 feet with jib.

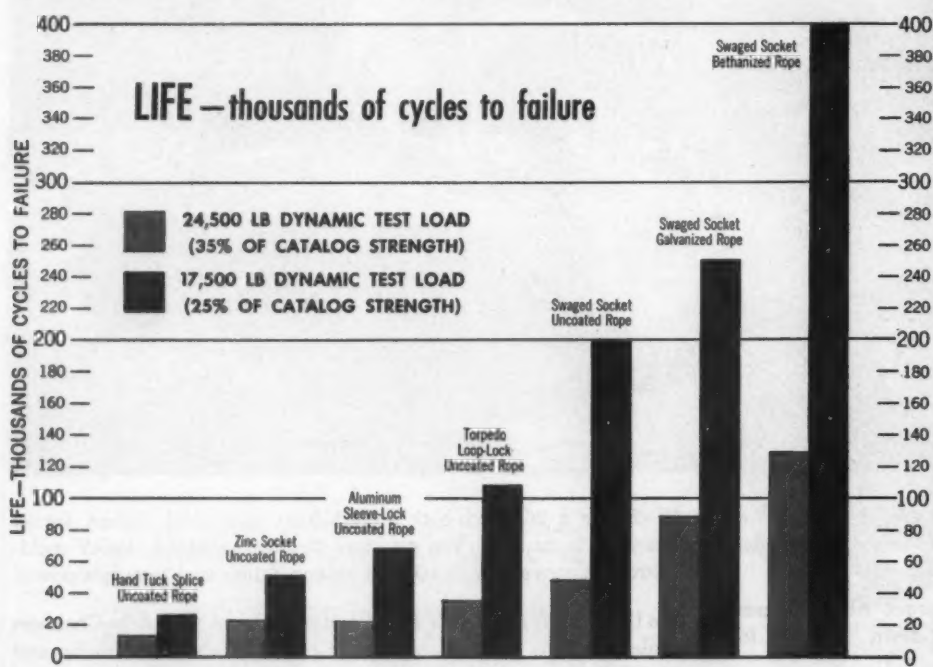
The machine's features include an air-operated boom hoist and engine master clutch to complement the unit's air-control system; adjustable cone rollers; and a 6×4 or 8×4 carrier available with gas or diesel engine. The carrier is designed to permit the transit machine to perform equally well in crane or excavator service.

Also featured on the Model 30-B are a 2-speed gear box, single-piece counterweight, heavier A-frame, hydraulic jacks, and—for machines with torque converters—2-lever dual governor control.

For further information write to the Bucyrus-Erie Co., Dept. C&E, South Milwaukee, Wis., or use the card at page 18. Circle No. 16.

TWO-YEAR STUDY REVEALS FACTS ON BOOM PENDANTS

Swaged socket proves best in exhaustive torture-tests



More than two years ago, Bethlehem began a research program to determine: (1) the type of end-fitting that would best prolong the life of pendants, and (2) the kind of wire rope that would stand up longest in this service.

Field research was carried on simultaneously with grueling laboratory tests simulating field conditions. This research was wholly objective. Our purpose was to find answers... not to confirm preconceived notions.

The dynamic tests convinced us that the swaged socket is best by a wide margin. These tests were cruel, impartial. They showed that in dynamic holding-power, the swaged socket is unsurpassed. They also revealed a less obvious fact: that the swaged socket distributes the stresses occurring in the rope near the terminal fittings, instead of creating points of stress concentration. Result: longer pendant life.

The rope designated "Bethanized" in the above

graphs was constructed of redrawn bethanized wire. The uniform, ductile zinc coating, applied electrolytically, acts as a cushion and lubricant between the wires in boom pendant service. Moreover, bethanized rope has the added advantage of high corrosion-resistance.

As shown by the graphs, bethanized rope with swaged sockets far outperformed hot-dip galvanized and bright ropes with various types of end-fittings. For further information, write or call us at Bethlehem, Pa. Our engineers will gladly give you details.

When replacing your present pendants or buying new equipment with pendants, specify bethanized rope and swaged sockets.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



For more facts, use Request Card at page 18 and circle No. 291

Transistorized megaphone has quarter-mile range

A transistorized power megaphone said to have a full ¼-mile range is offered by the Falcon Alarm Co., Inc.

Designated Chief, the unit employs a readily available battery, capable



of 6,000 2-second messages, and push-pull transistors in a special circuit to provide maximum clarity and carrying power. It is light in weight, easy to carry about, and requires no warm-up period, according to the manufacturer.

For further information write to the Falcon Alarm Co., Inc., Dept. C&E, 243 Broad St., Summit, N. J., or use the Request Card at page 18. Circle No. 2.

Lifting cylinder converts roller from 3 to 2 axles

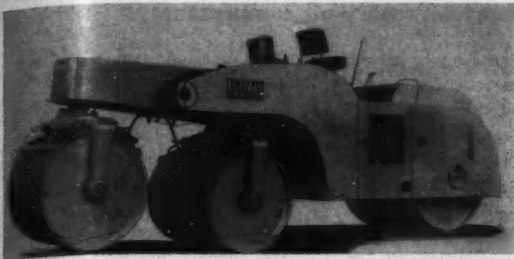
Due to the inclusion as standard equipment of a hydraulic lifting cylinder for the machine's walking beam, additional versatility—both in operation and in job applications—reportedly is now possible with the Buffalo-Springfield Model KX-33 3-axle 13 to 20-ton tandem roller.

With the hydraulic lifting cylinder, it is no longer necessary to depend on the terrain to position the walking beam (carrying the end guide roll) in the desired locking position. The operator can now raise or lower the beam at will.

The roller, with the center roll raised, can be used as a 13 to 20-ton 2-axle tandem, according to the company. Long-wheelbase arrangement offers the conventional 2-axle tandem weight distribution of one-third of the total weight on the steering roll and two-thirds on the drive roll.

By raising the end guide roll and by controlling the amount of ballast

CONTRACTORS AND ENGINEERS



With the new lifting cylinder, the end guide roll can be lifted hydraulically and locked in position. The center roll can be raised and locked to make the unit a long-wheelbase tandem.

In the rolls, the KX-25E can become a 3-axle tandem that puts equal compression on both rolls in contact with the surface being rolled.

Kits are available to permit the attachment of this new feature to machines now in the field.

For further information write to the Buffalo-Springfield Roller Co., Dept. C&E, 1210 Kenton St., Springfield, Ohio, or use the Request Card at page 18. Circle No. 17.

Strong new waterstop is lightweight, flexible

A new, improved waterstop is announced by W. R. Meadows, Inc.

Designated Sealtight Hydrojoint PVC, this waterstop is extruded from a special compound of polyvinyl chloride. Specifications include: tensile strength 2,250 psi; ultimate elonga-



tion, 300 per cent; temperature range, plus 176 degrees to minus 50 degrees F; and cold brittleness test, minus 50 degrees F.

The new waterstop is said to be chemically resistant to such liquids as chlorinated water, salt water, acids, alkalis, sewage wastes, and oil. It is supplied in 50-foot coils, and may be bent around corners or formed in curves to meet job requirements.

For further information write to W. R. Meadows, Inc., Dept. C&E, 26 Kimball St., Elgin, Ill., or use the card at page 18. Circle No. 15.

Announce improvement for closed-end tie wedge

The Dayton Sure Grip & Shore Co. announces a new modification of its standard closed-end tie wedge.

The unit, which is used with the firm's form ties, is now made with ridges running across the wale side of the wedge. According to the manufacturer, the improvement minimizes the possibility of the twisting or turning of a wedge: the ridges bite into the wale as the wedge is driven tight against it.

For further information write to the Dayton Sure Grip & Shore Co., Dept. C&E, 304 Kercher St., Miamisburg, Ohio, or use the Request Card at page 18. Circle No. 76.

Tire pressure gages for off-the-road tires

Three new tire pressure gages, designed for checking air pressure in tires on off-the-road equipment, are announced by the Dill Mfg. Co.

The three new models consist of a standard-bore, dual-foot gage; an oversize and standard-bore push-on gage; and an oversize and standard-bore dual-foot gage. All models are available in either high or low-pressure ranges.

To guarantee maximum efficiency

from tire gages, the manufacturer recommends that a master gage be used to check service gages. These master gages are also available in the Dill line.

Included with each gage is a certificate for one free service inspection, recalibration, and cleaning.

For further information write to the Dill Mfg. Co., Dept. C&E, 700 E. 82nd St., Cleveland 3, Ohio, or use the card at page 18. Circle No. 72.

NEW—LORAIN MC-218 MOTO-CRANE 18-TON CAPACITY—LETS YOU HANDLE BIGGER JOBS FASTER • 18-TON PROFITS—EARNS MORE, RENTS OUT FOR MORE • 18-TON MOBILITY— BIGGER, STURDIER, BUT LEGAL ON MOST ROADS—43 MPH • 18-TON VERSATILITY—EASILY CONVERTS FROM CRANE TO ¾-YARD SHOVEL, CLAMSHELL, DRAGLINE OR HOE



The cost? Far less than you would expect. Compare with others at even lesser capacities. See how the MC-218 stands out! For details see your Lorain distributor.

LORAIN®

THE THEW SHOVEL COMPANY, LORAIN, OHIO

For more facts, use Request Card at page 18 and circle No. 292



Here is the Vibro-Tamper Model J-4 attachment mounted on an International rubber-tire tractor, replacing the front-end loader bucket. The attachment can also be pulled by tractor to permit use of front-end loader during compaction.

Compaction attachment can be pushed or pulled

The International Vibration Co. announces the new Vibro-Tamper attachment Model J-4.

The unit can be towed to and from the job site and can be quickly mounted on any standard-make front-end loader or wheel tractor with front-end loader attachment. It can also be pulled behind the loader or tractor while compacting.

The Model J-4 is self-contained and does not require any auxiliary power installation on the propelling tractor for its operation. The tractor is used only for moving the J-4 either forward or backward over the material being compacted. Each shoe or pad of the 4-shoe Model J-4 utilizes the same 10,000-pound blow as that of the larger self-propelled Vibro-Tamper.

For further information write to The International Vibration Co., Dept. C&E, 16702 Waterloo Road, Cleveland 10, Ohio, or use the Request Card at page 18. Circle No. 71.

New gas turbine engine is compact, lightweight

A compact, lightweight automotive-type gas turbine engine developing 225 horsepower is announced by the Allison Division of the General Motors Corp.

Less than one-third the size of a diesel engine of comparable horsepower, the Whirlfire Model GMT-305 weighs only 650 pounds, is 30 inches wide, 25 inches high, and 37 inches long.

Incorporated in the engine is a gas-coupled power turbine that functions as a built-in torque converter to assure full-rated power over a broad speed range.

The Whirlfire is an air-cooled engine, with no coolant radiator, fins, fans, or plumbing required. It can operate on a variety of fuel types, including kerosene, leaded or unleaded gasoline, and diesel oil, and also can be adapted to operate on fuels such as propane or natural gas.

For further information write to the Allison Division, General Motors Corp., Dept. C&E, P. O. Box 895, Indianapolis 6, Ind., or use the Request Card at page 18. Circle No. 51.

Electric-motor-driven rotary air compressors

A new line of electric-motor-driven, oil-cooled, 2-stage rotary air compressors is announced by The Jaeger Machine Co.

The compressors feature the "jog" start method, and are equipped with GE Pan-A-trol control panels and drip-proof induction motors. A pneumatic timing relay accomplishes the jog start, thereby eliminating the need for a 2-speed motor. Once started, the motor automatically picks up to full speed in a few seconds.

This is accomplished by a single-start push-button.

Said to contain 80 per cent fewer moving parts than reciprocating compressors, these units also feature a self-contained oil-cooling system.

Capacities range from 130 to 625-cfm free-air delivery.

For further information write to The Jaeger Machine Co., Dept., C&E, 550 W. Spring St., Columbus 15, Ohio, or use the Request Card at page 18. Circle No. 26.

Heavy Construction Operators

GO FORD-WARD for greater payload... power

"Our Ford trucks haul up to a ton-and-a-half more payload per trip"

says William R. Collins, V.P.
William Collins and Sons, Fargo, N.D.

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can always get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."



"We trade every two years and find that Ford trucks bring highest resale price"

says John McCormick, Sec.-Treas.
Northern Improvement Co., Fargo, N.D.

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on-or off-the road."



"Our drivers like Ford's power... they get heavy loads under way fast"

says George C. Wilson, General Superintendent
Schultz and Lindsay Construction Co., Fargo, N. D.

"Ford's HD power in our T-750's gets heavy loads under way fast... helps keep us on schedule. And we can haul bigger payloads doing it... up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."



FORD TRUCKS COST LESS

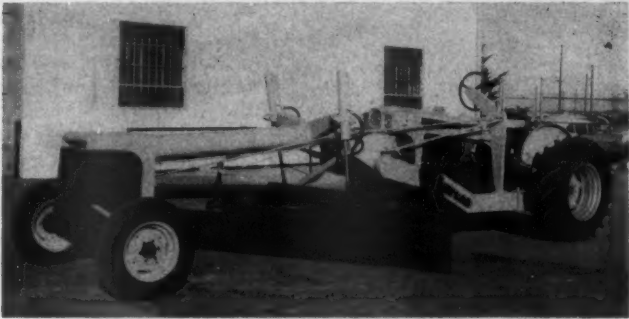
LESS TO OWN... LESS TO RUN... LAST LONGER, TOO!

Maintenance attachment announced for tractors

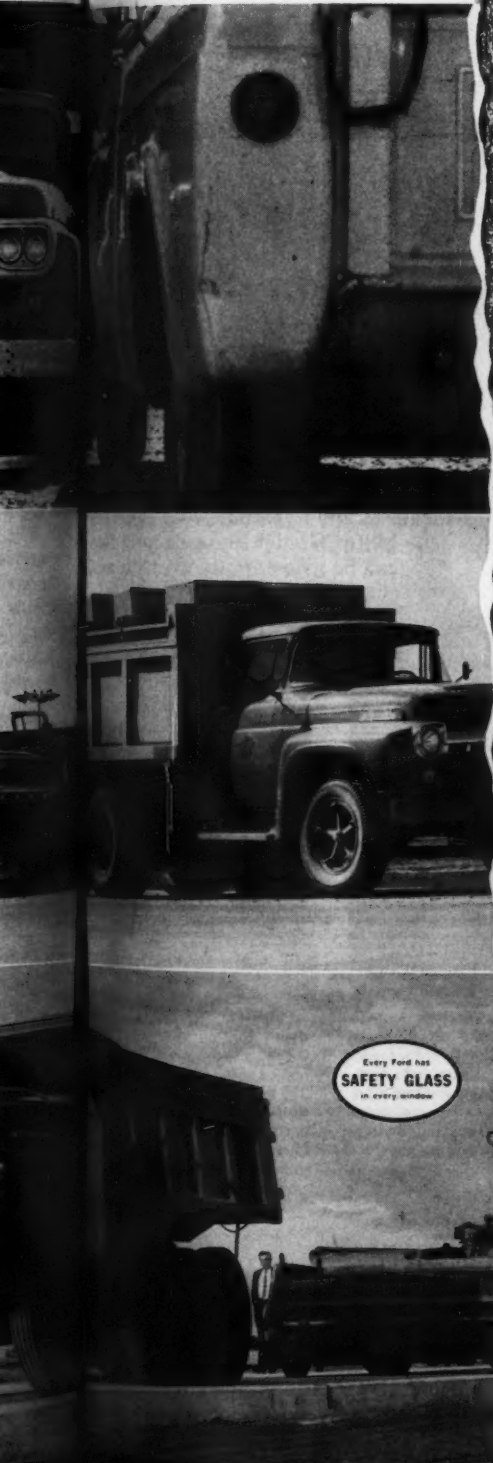
The Lev-L-All, a versatile attachment for use on Ford tractors, is offered by White Star Enterprises, Inc. Designed for grading, leveling, and ditching, as well as maintenance, the unit can be installed on all current models of Ford Series 600, 800, and 1000 tractors. According to the manufacturer, it permits the conversion of the power unit back into a regular tractor in a matter of minutes.

Optional attachments include: a power circle, power-shift moldboard, scarifier, moldboard extensions, wind-row eliminators, and 16-inch front wheels with 6.50 x 16 or 7.50 x 16, 6 or 8-ply tires.

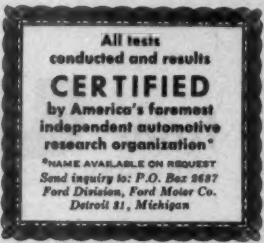
For further information write to White Star Enterprises, Inc., Dept. C&E, P. O. Box 1052, Wichita 1, Kans., or use the Request Card at page 18. Circle No. 66.



power resale value!



NOW!
CERTIFIED PROOF
FORD TRUCKS
COST LESS



'59 Ford Pickups Win
Economy Showdown U.S.A.
—average 25.2% better
gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's 1/2-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested—by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

HOW NEW '59 SIXES RATE IN GAS MILEAGE						
'59 FORD SIXES GIVE	25.2% more miles per gallon than Make "C"	31.1% more miles per gallon than Make "I"	9.6% more miles per gallon than Make "G"	42.6% more miles per gallon than Make "D"	22.0% more miles per gallon than Make "S"	25.2% more miles per gallon than the average of all makes

The '59 Ford Sixes, in every test, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low- and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's Economy Carburetor is standard at no extra cost.

Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?

New high-head pumps in sizes to 6 inches

The Rice Pump & Machine Co. offers a new line of self-priming, high-head centrifugal pumps in sizes from 1½ through 6 inches.

Available with base mounting, pneumatic tires, or steel wheels, the units may be belt-driven, flexible-coupling-driven, or direct-connected engine-driven.

Sizes 1½ through 3 inches are offered with electric or air-cooled gasoline power; sizes 4 through 6 inches are available with electric, gasoline, or diesel power.

For further information write to the Rice Pump & Machine Co., Dept. C&E, 400 Park Ave., Belgium, Wis., or use the Request Card at page 18. Circle No. 39.

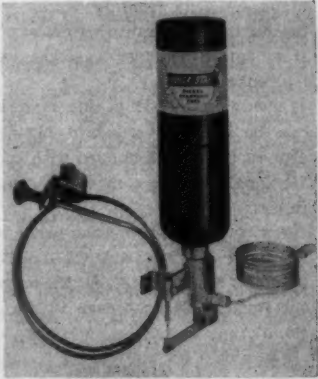
Diesel starting system is cold-weather aid

Quick-Start, an ether-base petroleum product said to trigger the ignition automatically and sustain the initial combustion of regular fuel, is available from The Turner Brass Works.

The starter fuel is stored in a tank under pressure, which discharges vapor through a copper tube into the manifold. It will start an engine in the coldest weather, it is claimed.

Quick-Start comes in a disposable tank that can be unscrewed from the unit and replaced in seconds. Each tank, according to the manufacturer, is good for about 250 starts, and installation requires but a few minutes.

For further information write to The Turner Brass Works, Dept. C&E, 821 Park Ave., Sycamore, Ill., or use the Request Card at page 18. Circle No. 53.



For more facts, circle No. 293



The new Trojan 304 is rated at a 3-cubic-yard capacity, weighs 27,400 pounds, and has a lifting capacity of 18,000 pounds.

Tractor-shovel model features operating ease

The Yale & Towne Mfg. Co. announces a new 4-wheel-drive, pneumatic-tire tractor shovel, weighing 27,400 pounds and having a maximum lifting capacity of 18,000 pounds.

Designated Trojan 304, the unit is rated at a 3-cubic-yard capacity.

According to the manufacturer, the new functional design of the Model 304 affords maximum operational efficiency and service accessibility, full 360-degree visibility, and maximum personal safety for the operator.

The machine is powered by a 6-cylinder diesel engine offering a 401-cubic-inch displacement and developing 160 horsepower at 2,500 rpm. It is equipped with a full power shift, 4-speed transmission, and a 3.0 to 1 torque-multiplying torque converter. The travel speed ranges from 3 mph in low gear to 23 mph in fourth gear, in both forward and reverse.

The Model 304 has a dumping clearance of 11 feet 8 inches under the hinge pin; and 9 feet under the bucket cutting edge.

For further information write to the Yale & Towne Mfg. Co., Trojan Division, Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 67.

New asphaltic concrete is tough and resilient

The Shell Oil Co.'s Epon petroleum-derived resin reportedly has been incorporated with asphalt to create a new paving concrete of exceptional strength and abrasion resistance.

The material is said to find an important application on airfields, due to its ability to withstand high-temperature blasts from jet-engine exhausts. It is resistant to solvent action from spilled jet fuel, gasoline, and hydraulic fluids.

According to Shell, this material can be made in standard hot-mix asphalt plants and applied with conventional paving machines and rollers.

For further information write to the Shell Oil Co., Dept. C&E, 50 W. 50th St., New York 20, N. Y., or use the Request Card at page 18. Circle No. 27.

New aggregate dryers feature improved design

Several new features for Bollard aggregate dryers are announced by the Bollard Asphalt Plant Division of The Colonial Iron Works.

The new dryers, with cold elevators, burners, fans, and dust collectors as optional equipment, are available as replacement units for existing or new asphalt plants.

Horizontal discharge eliminates the need for a hot-elevator pit, and, with dryer supports built to grade, concrete piers are unnecessary.

Sprocket teeth for the new tangential roller-chain drive are welded through the dryer shell so that the dryer cylinder itself functions as a sprocket, thus eliminating the need for ring-gear or segmental sprockets.

For further information write to the Bollard Asphalt Plant Division, The Colonial Iron Works, Dept. C&E, 17625 St. Clair Ave., Cleveland 18, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 73.

from **ULMAC...**

**NEW
FOR
'59**



*High-speed shoulder spreading
with the new **ULMAC U-500**
Shoulder Spreader*

The U-500 Shoulder Spreader quickly attaches to any Caterpillar No. 12 or 14 Motor Grader. Spreads to 12 feet can be made accurately with an



New curved blade, fabricated in three sections, mixes and rolls material out, minimizing segregation and side draft. Replaceable strike-off is of abrasion-resisting steel. Fully adjustable—provides any width to 12 feet.



36 inch conveyor (widest belt on any spreader) receives material directly from hauling units. Trucks dump onto large-capacity heat and acid resistant belt, delivering material rapidly without spillage. Conveyor is driven by simple, over-center clutch and mechanical drive, reducing maintenance. 50 HP Wisconsin engine provides dependable power.



Positive screw-type strike-off adjustment provides accurate depth control, eliminates blade creeping. Four wheel suspension improves stability for precise control of depth. Solid rubber tires do not deflect under loads. Carriers can be adjusted to raise or lower conveyor for matching gate heights.

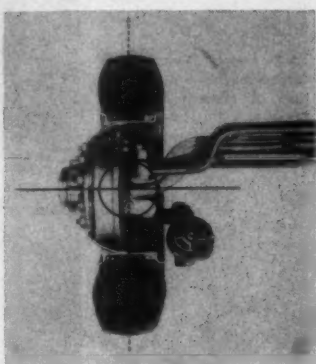
See your Caterpillar-ULMac Dealer for a demonstration and full information or write direct

Axle makes steering easy with no power assistance

Easier steering without the weight and cost penalties of power assistance is claimed for the new Timken-Detroit "center-point" steer front axle announced by the Transmission and Axle Division of the Rockwell-Standard Corp.

Other advantages, according to the company, include safer operation of the vehicle because of better control and less driver fatigue, plus reduced maintenance with less downtime because tires and steering parts last longer.

In the new center-point design, the king pin is perpendicular to the ground line, and is moved outward



into the wheel so that the center line of the tire and the center line of the wheel are on a relatively common plane. This permits the king pin to act merely as a pivot point while the vehicle load is supported solely by the axle. By thus relieving the king pin of the job of partially lifting the load as the wheels are turned, as in conventional front axles, less steering resistance without loss of any vehicle control is accomplished.

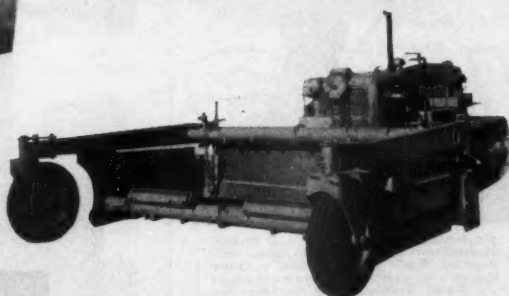
For further information write to the Transmission and Axle Division, Rockwell-Standard Corp., Dept. C&E, Detroit 32, Mich., or use the Request Card at page 18. Circle No. 30.

low cost base spreading with the New

ULMAC U-100 base spreader

Take any dozer-equipped Caterpillar D8, D7 or D6 Tractor in your spread and in less than ten minutes you've converted it to the most versatile base spreader available!

Just two bolts and four wing nut clamps secure the U-100 Base Spreader to your dozer. Accurate lifts from 1 inch to 20 inches can be made in widths to 16 feet with *any spreadable material*. The U-100 is the *only* spreader that makes smooth, accurate parallel lifts.



Exclusive tubular crossbeams telescope, adapting the U-100 to any dozer blade width. Set up is accomplished quickly and easily.

Large push rollers handle tandems of all trucks. Full depth doors with replaceable strike-off blades provide accurate spread control. Three position caster wheels can be locked in place minimizing side draft.

Use prime movers already in your spread and gain accurate high speed base and shoulder material placement at a fraction of the cost of single purpose self-propelled machines! Increase your equipment utilization, speed material placement and increase your profits with the ULMAC U-100 Base Spreader and U-500 Shoulder Spreader.



New simplified controls permit faster, easier operation, do not require full time operator attention. Conveniently located platform allows operator to guide hauling units and also operate conveyor. Simplified conveyor controls consist of clutch lever and throttle.

spreadable material. Spread depth can be adjusted from 6 inches above to 18 inches below pavement. Wider spread arrangements are available on request.



New quick-detachable hitch design permits rapid hook-up and provides simple weight transfer. Entire rear weight of spreader can be transferred to motor grader by adjusting wing nuts.

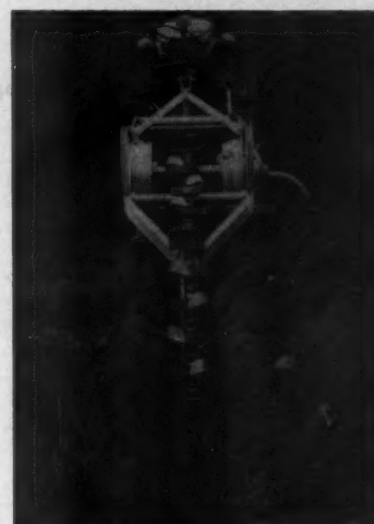
ULMAC

Equipment Co., Inc.

Manufacturers of Auxiliary Equipment For Caterpillar Products

EL PASO, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 294



Any wheel-type tractor with a live power takeoff and ASAE standard 3-point hitch reportedly can be equipped to operate the Laster trencher. The new unit digs 6 to 14-inch-wide trenches to a maximum depth of 4 feet.

New detachable trencher for wheel-type tractors

A trencher that can be quickly detached to free the tractor for other work, and is designed not to interfere with front-mounted equipment, is announced by Deltec, Inc.

Known as the Laster trencher, the unit reportedly can be adapted to any wheel-type tractor with a live power takeoff and ASAE standard 3-point hitch. An "incher" device moves the tractor forward at the correct rate of speed to allow the steel cutters to dig from 6 to 14-inch-wide trenches.

Moving along at speeds up to 500 feet per hour, the machine is said to dig a clean trench to a maximum of 4 feet in depth with standard equipment. A boom extension is available for deeper trenching. Soil is conveyed to the right of the cut with a screw-type earth-mover.

Weight of the new unit is approximately 700 pounds.

For further information write to Deltec, Inc., Laster Trencher Division, Dept. C&E, 185 Industrial Road, Youngstown 9, Ohio, or use the Request Card that is bound in at page 18. Circle No. 19.

Portable microfilmer is powered by battery

The Copiflash, a portable 35-mm microfilming camera designed to microfilm any document, map, wiring diagram, or business record up to 9½x15 inches, is available from Camcopy, Inc.

The unit itself weighs 5 pounds. It is preset and prefocused, and contains its own light source. The power source, a battery, is attached to the side of the unit, and has a lifetime of approximately 15,000 shots.

Exceptional ease of operation is another reported feature.

For further information write to Camcopy, Inc., Dept. C&E, P. O. Box 27, Matawan, N. J., or use the Request Card at page 18. Circle No. 20.

Enclosed-type cement box operates automatically

A new, improved enclosed-type batch-truck cement box is available from the Sioux City Foundry & Boiler Co.

The boxes reportedly are easy to load, and each batch is held securely with the cement protected from weather and wind for long or short hauls. To unload, the operator merely raises the truck to discharge into the paver skip hopper. As soon as the first batch is unloaded, he has only to trip a lever for the next batch until the unloading cycle is completed for

the entire load.

These cement boxes are quickly installed in any standard dump truck, and are easily welded or bolted to divider boards also manufactured by the firm. They are made in two standard sizes of 12.5 and 15-cubic-foot capacity; other sizes are available to specifications.

For further information write to the Sioux City Foundry & Boiler Co., Dept. C&E, P. O. Box 295, Sioux City 2, Iowa, or use the Request Card at page 18. Circle No. 60.

Each batch is carefully controlled for proper mixture of cement and aggregates, and automatic operation holds labor to a minimum.



THE '59 LINE OF *Kelley* CONTRACTORS' EQUIPMENT



POWER TAMPERS

Self-propelled... delivering 2400 impacts a minute. Two models: 18" wide shoe, and 36" wide shoe. For packing down earth backfill to maximum density next to foundations, on road-widening jobs, etc. Also for finishing blacktop... with heater shoe attachment available.



POWER BUGGIES

Positively tops for fast and dependable handling of concrete and other materials. Hydraulic mechanism dumps or spreads loads up to 10 cu. ft. and there's full power in both front wheels for extra traction. Safety step and guards protect operator.



SPACE HEATERS

What a blast! From the Kelley Hot Shot Space Heaters, one delivering 120,000 Btu/Hr and the other delivering 320,000 Btu/Hr. Let 'er blow outside... work goes on inside with Kelley Hot Shots! For work around walls, floors, scaffolds and hundreds of other construction jobs.

- UP-TO-DATE DESIGNS
- CAREFULLY ENGINEERED AND FULLY TESTED
- BUILT FOR ROUGH USE
- SPEEDS UP WORK... SAVES MONEY



POWER TROWELS

Six models to choose from... 2 deluxe Hydra-Trowels, 34" and 44" sizes, with fingertip blade control... and 4 super models with manually-adjusted blade pitch: 24" Kelley Rantam, 29" Kelley Boy, the popular 34" Kelley Chief and the big 44" Kelley Commander... a size for every job.



COMPACTORS

The new Kelley Compactor with "Compaction Control"... easier operating, faster, more powerful. For compaction-flooding all types of concrete floors, for keying in surface hardeners, and for bonding dry-ramp floor topping to a concrete slab. Grinding attachments available.



MACHINE DIVISION

The Wessner-Repp Co., Inc.

283 Hinson Avenue

Buffalo 23, N. Y.

Dealer listed in Yellow Pages as Kelley Equipment

NAME _____

STREET _____

CITY _____

ZONE _____

STATE _____

For more facts, use coupon or Request Card at page 18 and circle No. 295

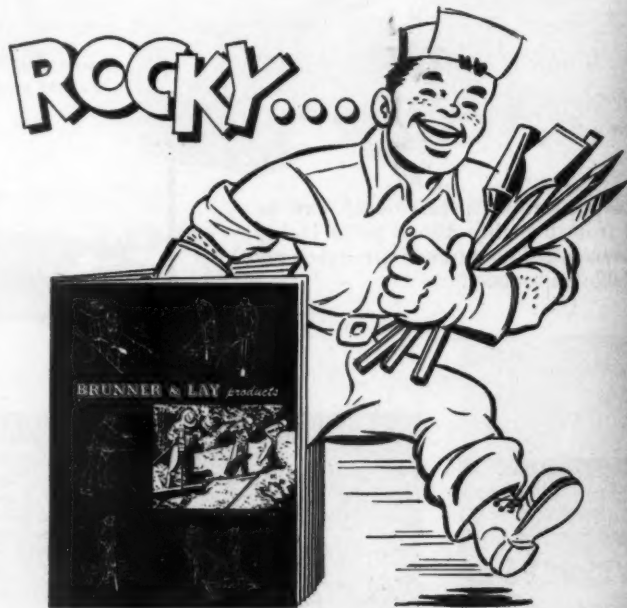
Punched-card system handles accounting work

A new system of punched-card data processing especially designed for small business is announced by the Remington Rand Univac Division of the Sperry Rand Corp.

The system permits the machine processing of such accounting work as payroll, inventory control, and accounts receivable. Consisting of four

basic pieces of equipment, it operates at a speed of 60 cards per minute and can be adjusted to perform faster.

For further information write to the Remington Rand Univac Division, Sperry Rand Corp., Dept. C&E, 315 Fourth Ave., New York 10, N. Y., or use the Request Card at page 18. Circle No. 55.



the MOST "ACTIVE PARTNER" your business can have!

Your business is his business. He makes available the greatest depth of line offered by any organization. Also the nearest and quickest source of supply from branch plants (with conversion shop facilities) and dealers. Each with complete stocks of Brunner & Lay Tools which for 77 years have been proved and improved, that get better all the time. Call your local Brunner & Lay dealer. Request NEW bulletin #358, with pictures and complete specifications of each tool. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. Sales Offices & Conversion Shops: Albuquerque, Asheville, Birmingham, Boston, Dallas, Denver, Los Angeles, Philadelphia, Portland, Sacramento, Seattle, Lachine, P.Q.

Brunner & Lay Products

CARBIDE ROK-BITS • INTRASET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & SECTIONAL STEEL
AIR TOOL ACCESSORIES—MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, etc.

For more facts, use Request Card at page 18 and circle No. 296

CONTRACTORS AND ENGINEERS

New laboratory compactor prepares test specimens

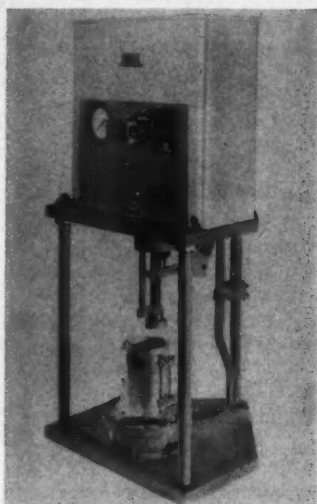
An electro-hydraulic compactor for use in preparing and compacting samples of bituminous mixes, asphaltic concrete, soils, and similar materials, is offered by Soiltest, Inc.

Designated Model CN-425A, the apparatus features adjustable compaction foot pressures, adjustable time of dwell on the specimen, and a variable rate of compaction.

Samples may be compacted in either a 4 or 6-inch-diameter mold. A separate compacting foot for use with each mold is provided. A heated foot assembly is available as an accessory.

Other features include an automatically indexing mold table, a predetermined cutoff counter, a pressure dwell timer that can be set to a variety of dwell periods, both automatic and manual operation, and adjustable air-pressure regulators. The compactor is small in size and can be floor or table-mounted.

For further information write to



Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 57.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

Double-diaphragm pump offers many features

A new Humdinger double-diaphragm pump said to provide more capacity with greater solids-handling ability is announced by the Ralph B. Carter Co.

Standard equipment on this 4-inch pump includes oversized, heavy-duty ball valves; spring-cushioned diaphragm plunger rods to eliminate shock and protect bearings; easily replaceable valve seats; a suction air chamber to reduce suction pulsation

and prolong hose life; a discharge air snifter valve that minimizes discharge surge and hose chafing.

The unit is available with a Wisconsin or Briggs & Stratton engine, as well as with electric-motor drives. Mountings are available.

For further information write to Ralph B. Carter Co., Dept. C&E, 192 Atlantic St., Hackensack, N. J., or use the Request Card at page 18. Circle No. 24.



CALWELD

the contractor's drilling rig!

Because it does so many jobs...

- digs caisson pier holes
- prepares belled footings
- pre-bores concrete piles
- provides big sub-soil samples
- drills dry wells

...it drills any size hole from 1' to 10' dia. and 200' deep.

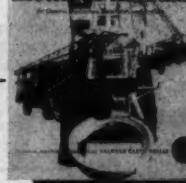
...it excavates to a depth of 45' in less than one hr.

...it travels fast from job to job.

...it sets up ready for drilling in minutes.



methods manual



Write for the new *Methods Manual*, a 16-pg. booklet filled with job facts and methods.

CALWELD DRILLS

CALWELD, INC., 7222 E. Slauson Ave., Los Angeles 22, California

For more facts, use Request Card at page 18 and circle No. 298

ROCKFORD



SPEED REDUCERS (Reduction Gears) With OVER-CENTER Gear-Tooth Drive CLUTCH

ROCKFORD Speed Reducers incorporate a complete clutch power take-off and reduction gear in one complete unit. They are suitable for transmission of power from internal combustion engines where out-put shaft speeds required are lower than engine speeds. A heavy-duty, over-center clutch, with gear-tooth drive construction is used. Positive engagement or disengagement is accomplished by mechanical action of toggle arrangement. Various reduction ratios are available.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

314 Catherine St., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International - 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 297

MARCH, 1959



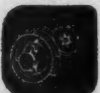
Small Spring Loaded



Heavy Duty Spring Loaded



Oil or Dry Multiple Disc



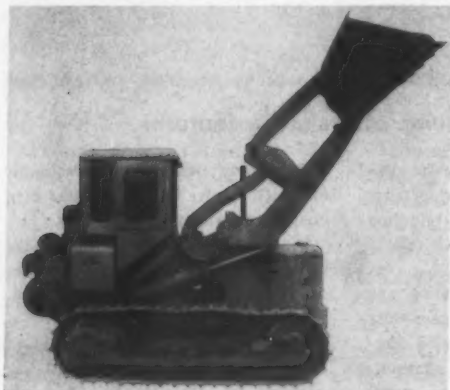
Heavy Duty Over Center



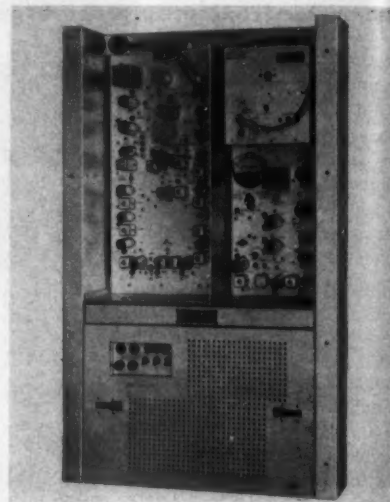
Power Take-Offs



Speed Reducers



A Crenlo cab is mounted on a Caterpillar 977 Traxcavator. Other cabs are available for mounting on Traxcavator Models 955 and 933.



"DRILLED MORE THAN 100 HOLES in Hard Concrete WITHOUT RESHARPENING" (*)
IMPOSSIBLE with steel star drills! ROUTINE with the NEW ENGLAND

Thunder-twist®

Carbide-Tipped MASONRY BITS

Most economical bit you can use in any electric or pneumatic hammer! Drills in any masonry from brick to granite. Does the work of 16 star drills. And it's a one-man operation! Exclusive combination of vertical and spiral flutes provides positive dust removal... no packing, stalling, or binding. Tops in economy and efficiency on every job. Sizes: 3/16" to 1 1/2" diameter. Extended lengths up to 18". Send for free drilling manual.

Other New England Carbide-Tipped Bits Include:

Cyclo-twist®

Bits for rotary drilling of ordinary masonry.

Cyclo-Core®

Multi-Tipped Bits for rotary drilling of hard masonry.



Designed, Engineered, and Proven for the Job.

(*) Write for proof of performance



Send for Free "MASONRY BIT SELECTOR GUIDE" and Start Using Today's Most Economical Masonry Bits

New England CARBIDE TOOL CO., INC.
 55-5 Commercial St.
 Medford 53, Mass.

Please send me a copy of the FREE "MASONRY BIT SELECTOR GUIDE"

Name _____
 Address _____
 City _____ State _____

For more facts, circle No. 299

New cabs announced for Traxcavator models

Crenlo, Inc., announces three new cabs for Caterpillar Traxcavator Models 977, 955, and 933.

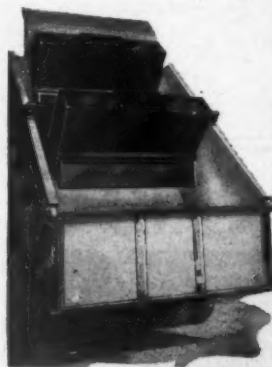
Twelve-gage steel is used in all body panels, and 16-gage material is used in the double-walled doors. All cab mounting brackets are heavy-duty 1/4-inch plate, and liberal use is made of weldments for strength without excessive weight.

Windows on these cabs are designed to provide a clear view of the operating area, and windshields are vertically mounted to minimize collection of dust on the glass. Designed for operator comfort, the cab extends beyond hydraulic controls for easy operation of the bucket.

Crenlo cabs can be installed or removed from the Traxcavator without alterations or disconnection of hydraulic lines.

For further information write to Crenlo, Inc., Dept. C&E, 1690 Fourth Ave. N. W., Rochester, Minn., or use the Request Card at page 18. Circle No. 61.

A "MUST" FOR EFFICIENT PAVING
New Enclosed Type Batch Truck Cement Boxes



New Enclosed Type Batch Truck CEMENT BOXES offer controlled mixing, automatic operation, better cement with less labor.

Made in two sizes to fit standard dump bodies. Write for detailed literature and **LOW FACTORY PRICES!**



Sioux City Foundry & Boiler Co.

EAST 8th & DIVISION SIOUX CITY, IOWA PHONE 5-7967

For more facts, use Request Card at page 18 and circle No. 300

MOVES with the JOB! NO CONCRETE PITS!



THURMAN

Portable Truck Scale

OTHER THURMAN SCALES:
 PIT • WAREHOUSE • INDUSTRIAL • WHEELBARROW
 LIQUID WEIGHING • BATCHING • AUTOMATIC



CAPACITIES: 20 to 32 tons
 DECK LENGTHS: 18 to 42 ft.

Sets up in minutes... accurate, precision weighing *on-the-spot*. Complete steel deck construction. Low original cost... no maintenance costs. Can be installed as a pitless scale. Saves pit costs. WRITE OR WIRE FOR BULLETIN 601

THURMAN

Since 1918

**THURMAN SCALE COMPANY, 156 N. 5TH STREET
 DEPT. CE-2, COLUMBUS, OHIO**

For more facts, use Request Card at page 18 and circle No. 301

CONTRACTORS AND ENGINEERS

Offer FM radio terminal for distant operations

Constant contact with distant construction operations reportedly is made possible by the compact new Type 896 FM radio terminal offered by Radio Engineering Laboratories, Inc. (See photo on facing page)

Up to six simultaneous conversations from suitable multiplex equipment may be handled by the terminal.

Transmitter, receiver, and power supply are housed in a single relay rack-mounted enclosure standing 35 inches high and weighing 110 pounds. Frequency range is normally 148 to 174 mc; transmitter power is 50 watts; radio gain is 119 decibels; and the receiver noise figure is 7 decibels.

For further information write to Radio Engineering Laboratories, Inc., Dept. C&E, 29-01 Borden Ave., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 75.

Hydraulic injector drill is highly versatile unit

The Houston Tool Co. announces a new hydraulically operated, completely self-contained injector drill designated HI-Vac Model H. D. 250. Featured is its ability to drill in six different ways: vacuum; reversed water or mud drilling; standard forced water or mud drilling; diamond drilling by vacuum or water; standard continuous-flight auger drilling; and compaction test drilling.

The Model H. D. 250 weighs 1,800 pounds and can be mounted in any $\frac{3}{4}$ -ton pickup, truck, or on a tandem-wheel trailer.

For further information write to the Houston Tool Co., Dept. C&E, P. O. Box 251, Santa Susana, Calif., or use the Request Card at page 18. Circle No. 94.

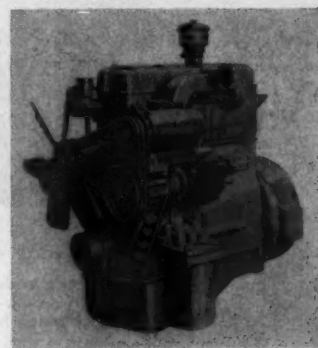
Two new diesel engines offer 70, 80 horsepower

Two new diesel engines, the 70-hp Model J-70 and the 80-hp Model J-80, are announced by the Cummins Engine Co., Inc.

These 4-cycle units are designed for such applications as crawler tractors, shovels and cranes, graders, rollers, air compressors, and generator sets. They are naturally aspirated models of 4 $\frac{1}{2}$ -inch \times 5-inch bore and stroke, with a 267-cubic-inch piston displacement. The J-80 develops its rated horsepower at 2,500 rpm, and the J-70 at 2,000 rpm.

Both models have 5 main bearings of 3 $\frac{3}{8}$ -inch diameter. They have extra large 2 $\frac{1}{2}$ -inch-diameter connecting rod journals, 1 $\frac{1}{2}$ -inch-diameter piston pins, and 5 camshaft bearings. Both feature easily removable wet-type cylinder liners designed to make in-frame overhauls practical.

For further information write to the Cummins Engine Co., Inc., Dept. C&E, Fifth St., Columbus, Ind., or use the Request Card at page 18. Circle No. 50.



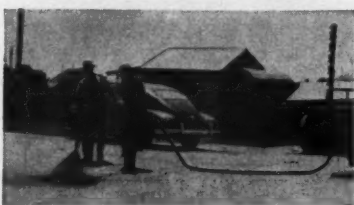
PERMANENT PAVEMENT PATCHING — HOT OR COLD — IN ANY SEASON



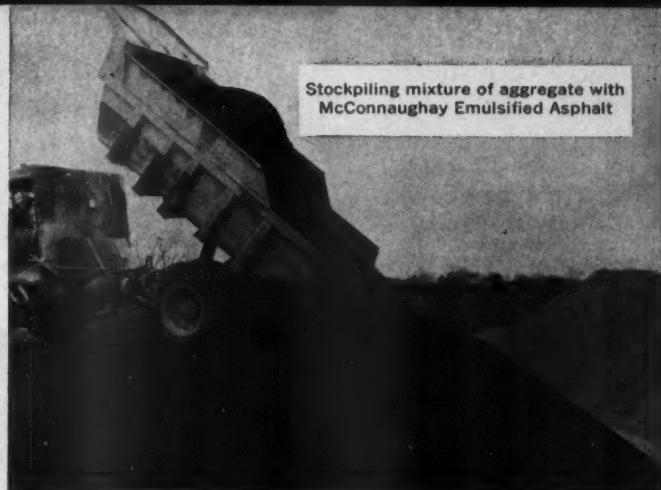
Summer patching: Cold mix direct from stockpile



Winter patching: Hot mix prepared on the job



General patching: Spray attachment from any tar kettle



Stockpiling mixture of aggregate with McConnaughay Emulsified Asphalt

Automatic "SLOPE METER"

AIDS OPERATOR • SPEEDS WORK



"INSTRUMENTS THAT HELP
YOU MAKE THE GRADE"

SLOPE METERS can be used to advantage on all sizes of tractors, bulldozers, scrapers and graders.

- Do you want to . . .
- Make accurate slopes in less time
- Reduce machine time required to make perfect highway crowns
- Speed up night work
- Eliminate costly hand checking
- Construct and check variable slopes while your machines are in motion
- Avoid wavy slopes—Slope Meters give a continuous check between stakes
- Help your operators do more and better work

Then order a SLOPE-METER for each one of your machines today from your Equipment Distributor or

THE SLOPE METER CO.
EXCELSIOR, MINNESOTA

For more facts, circle No. 302

MARCH, 1959

McCONAUGHAY LICENSEES Operating K. E. McConnaughay Emulsified Asphalt Plants

FLORIDA
E. A. Mariani—Emulsified Asphalt
Hooker's Point, Tampa

ILLINOIS
Emulsions, Inc.—Lawrenceville

INDIANA
Bituminous Materials Co.
P. O. Box 1140, Terre Haute
Wabash Valley Asphalt Co.
Terre Haute
Walsh & Kelly
R. R. No. 2, Gary
Brookman Construction Co.
17th & Gharkey Sts., Muncie
Fauber Construction Co.
Lafayette
Asphalt Materials & Construction, Inc.
960 East 22nd, Indianapolis 2
Bituminous Materials Co.
E. Swihart St., Columbus City

IOWA
Bituminous Materials & Supply Co.
409 Fifth Street, West Des Moines
Plants: Spirit Lake, LeMars, Carroll,
Algona, Lehigh, Davenport

KENTUCKY
Emulsified Asphalt Co.—Kuttawa

LOUISIANA
Bituminous Materials Co.—Metairie
Serving Alabama, Mississippi, and Louisiana

MAINE
Doherty and Swearingen Co.
53 Main St., Yarmouth

MASSACHUSETTS
James Huggins & Sons, Inc.
Medford & Commercial, Malden 48

MICHIGAN
Bituminous Materials Co.
318 Atlantic St., Bay City
Bituminous Materials Co. Escanaba
Bituminous Materials Co.
416 S. Water St., Jackson

NEW YORK
Knight Paving Products, Inc.
1655 Union Rd., Gardenville
Knight Paving Products, Inc.
Vine Street, Ithaca
Knight Paving Products, Inc.
1980 East Avenue, Rochester 10
Knight-Bitumen Corp.—Watertown
Albany Asphalt & Aggregates
75 State St., Albany
312 Brook Street
Bayshore, L. I., N. Y.

SOUTH CAROLINA
Seaco, Incorporated
2700 Industrial Drive, Columbia

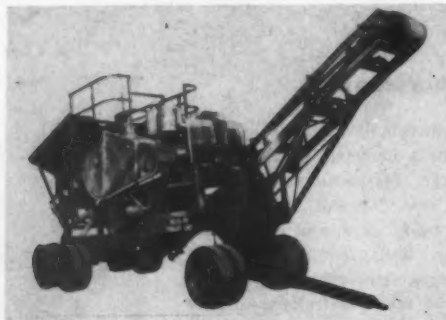
TENNESSEE
Asphalt Products Co., Inc.
Powell Ave., Nashville 4

CANADA
T. J. Pounder & Co., Ltd.
1474 Wall St., Winnipeg, Man.
Eastern Representative:
John A. Dow
157 Church St., New Haven 10, Conn.

K. E. McCONAUGHAY LAFAYETTE
INDIANA

EMULSIFIED ASPHALT PLANTS AND PROCESSES

For more facts, use Request Card at page 18 and circle No. 303



On Pioneer's Model 151PR, the long-jaw-type crusher features hydraulic-shim adjustment for crusher setting through a range from 2½ or 3 inches up to 6 inches.

New line of portable primary crushing units

The first of a new series of portable primary crushing units is announced by Pioneer Engineering.

Designated Model 151PR, this unit has a 2036 overhead eccentric jaw crusher and a 3 x 8-foot apron-type feeder, chain-driven, with clutch, from the crusher. A 19-foot-long conveyor is a feature, and all these components are mounted on a semitrailer-type chassis.

The jaw crusher, with 20-inch opening, is of the long-jaw type, and has a hydraulic-shim adjustment for crusher setting through a range of

2½ or 3 inches up to 6 inches. The crusher is installed on the chassis at an angle that directs the material into the crushing chamber along the natural lines of flow from the feeder. This aids the forced-feed action, relieves bridging, and reduces void spots in the crusher, according to the manufacturer.

For further information write to Pioneer Engineering, Division of For & Co., Inc., Dept. C&E, 3200 Corn Ave. S.E., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 95.



This compact Jaeger Model 2PN, pumps all the water a 2" suction hose can handle. With 2½" suction hose it pumps more than 14,000 gph.

Now handle more water with Jaeger pumps

Today's Jaeger Sure Prime pumps deliver performance never before offered—and at slower, long-life operating speeds. For example, a Jaeger 6PH can handle 100,000 gph as a dewatering pump or deliver 975 gpm at 60 psi pressure for well point jetting or gravel washing. Base your pump buying on latest information. See your Jaeger distributor or send for catalog.

THE JAEGER MACHINE CO., 701 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • MIXERS • PAVING SPREADERS and FINISHERS

For more facts, use Request Card at page 18 and circle No. 304

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

Tooth-point lock pin easy to insert, remove

The General Metals Corp. offers a new type of tension lock pin to be used in conjunction with its Dragon Tooth points. This pin is substantially easier to insert and remove, the manufacturer states, than previous methods permit.

The tertiary alloy used in the pins reportedly produces superior physical characteristics, thus reducing breakage under heavy impact. Points are available for shovels, loaders, rippers, draglines, dozers, trenchers, hoes, scarifiers, and clamshells.

For further information write to the Village Blacksmith Division, General Metals Corp., Dept. C&E, Watertown, Wis., or use the Request Card at page 18. Circle No. 91.

TIME IS MONEY!



Sterling

RE-BAR TIE WIRE

will help you
SAVE BOTH

Sterling Re-Bar Tie Wire for the handy reel dispenser worn at the belt, saves tying time... eliminates waste... steps up efficiency. Safer, too! With Sterling Re-Bar Tie Wire there are no loose ends to endanger workmen's eyes or catch on protruding objects. Kinks and tangles are eliminated. And, Sterling Wire is tougher, stronger and more workable to provide firm, snug ties. Save time—save money with Sterling... the better wire for better ties.

See Your Distributor



FITS ALL
STANDARD
REEL
DISPENSERS

Sterling Re-Bar Tie Wire is available in coils to the box. No. 14 or No. 16 wire.

**NORTHWESTERN
STEEL AND WIRE
COMPANY**
SINCE 1879
STERLING, ILLINOIS

For more facts, circle No. 304
CONTRACTORS AND ENGINEERS

500 Sweeping Hours From ONE... DANLINE* Brush

Toss away those old fibre sweeping brooms and replace with a Danline wire brush—once—let your sweepers do a thorough job. You'll get up to 3000 sweeping miles from one Danline, and you'll get it at less than 10 cents per sweeping mile... Danline's engineered construction allows rapid assembly—uses special round brush wire—already proved on the toughest industrial jobs... Two men, in less than twenty minutes, can easily assemble a Danline... A Danline brush can remove 10" of sand in a single pass!... For a really clean sweep, test one on your own sweeper.

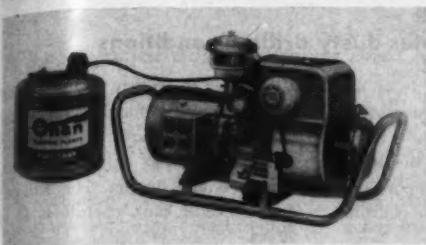
Newark Brush Company

260 MICHIGAN AVENUE
KENILWORTH, NEW JERSEY

For more facts, use Request Card at page 18 and circle No. 305

*U.S. Pat.
2064112





Portable electric plant designed for dual role

A lightweight 2,500-watt electric generating plant designed for portable and/or emergency standby is announced by D. W. Onan & Sons, Inc. The completely self-contained 140-pound unit is approximately 24 inches long, 15 1/2 inches wide, and 19 inches high. It delivers ac electric power in either straight 115-volt, straight 230-volt, or combination 115/230-volt current.

Power is supplied by an Onan Model AJ single-cylinder, 4-cycle, air-cooled engine. The firm's all-climate generator, rated at 2,500 watts ac, is direct-connected to the engine for positive, permanent alignment.

A separate 5-gallon fuel tank is an added feature.

For further information write to D. W. Onan & Sons, Inc., Dept. C&E, 2315 University Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 85.

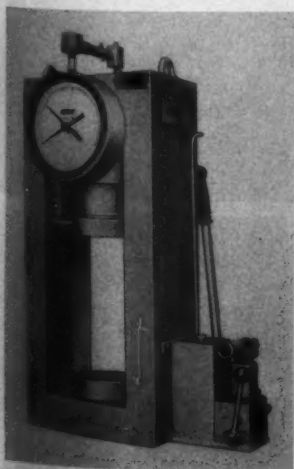
Job-site concrete tester is versatile machine

The Model FT-20 job-site testing machine for concrete and concrete products is available from Forney's Inc.

Featuring a load rating of 125 tons, the unit is offered with a manually operated 2-stage automatic pump, and is equipped for testing 6x12-inch cylinders in compression.

Accessories are available for conversion to electrical operation; and for testing concrete blocks, concrete pipe cores, concrete and clay drain tile, cement and concrete cubes, concrete beams and lintels, as well as compression and modulus of rupture of brick.

For further information write to Forney's Inc., Dept. C&E, Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 21.



Tractor-drawn scraper has improved design

A new, tractor-drawn Lowbowl scraper, the No. 435 Series C, is announced by the Caterpillar Tractor Co.

Designed for use with the Caterpillar D7 tractor, the No. 435 has a struck-capacity rating of 13 cubic yards. Heaped capacity is 18 yards.

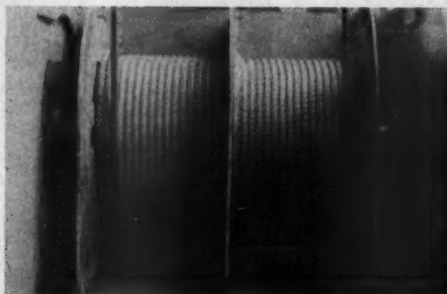
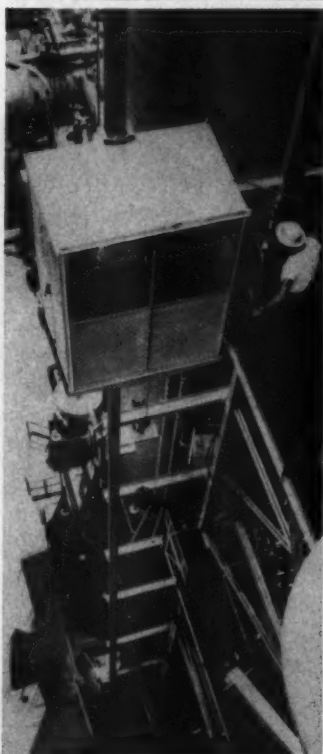
Primarily, the changes in this

scraper over its predecessor involve structural improvements said to give longer service life and lower maintenance. Areas of greatest change are the bowl, apron, and ejector.

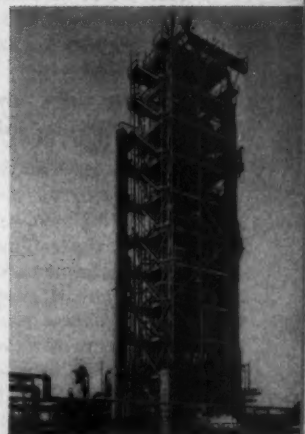
For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 99.

TO INSURE MAXIMUM SAFETY HAWKEYE PRODUCTS CORPORATION

Standardizes on Lebus Counterbalance Grooving For Personnel Elevators



Top photo shows wire line just starting to spool on dual drums which have been Lebus Counterbalance Grooved. Note in bottom photo how perfectly synchronized and spooled the wire line appears after the sixth layer of line. As is evident, a slightly unequal winding would create a serious operational problem. Drum diameter and length are kept at a safe minimum size only through use of Lebus Counterbalance Spooling System.



A NEW STANDARD OF SAFETY AND PERFORMANCE IN ELEVATOR SERVICE

Here you will witness, in action scenes, a new packaged elevator which can be moved and set up anywhere to lift men and materials with greater safety.

To achieve the maximum in safety and comply with the strictest requirements for carrying personnel, the Hawkeye Products Corporation utilize two independent hoisting cables winding on a Lebus Counterbalance grooved dual hoisting drum. Both sides of this dual

drum must wind the cables in perfect unison to assure proper functioning of safety devices. Hawkeye reports, "It would be impossible to obtain this perfect synchronization in dual spooling if it were not for the Lebus Counterbalance Spooling System."

Wherever hoisting units and wire line are in use, the drum core should have Lebus Engineered Spooling.



LEBUS INTERNATIONAL ENGINEERS, INC.

LONGVIEW, TEXAS

WORLD HEADQUARTERS FOR ENGINEERED SPOOLING

Write for catalog with complete information

For more facts, use Request Card at page 18 and circle No. 307



The heat exchanger on the tractor-digger combination is equipped with a 6-volt motor; a resistor is added when the unit is installed on a tractor with a 12-volt motor.

Power digger available for new Ford tractor

The Sherman Model F-8 Panther power digger is available for mounting on Models 1821 and 1841 of the recently introduced Ford Industrial tractor.

A feature of this tractor-digger combination is the use of an independent electric fan-cooled heat exchanger that serves the Industrial-Universal and Sherman digger hydraulic system.

According to the manufacturer, the installation neutralizes such factors as extremely hard digging, high atmospheric temperatures, and sun heat radiation.

The heat exchanger is equipped with a 6-volt motor; a resistor is added to the electrical system when the digger is installed on a tractor with a 12-volt circuit.

For further information write to Sherman Products, Inc., Dept. C&E, 3200 W. 14 Mile Road, Royal Oak, Mich., or use the Request Card at page 18. Circle No. 42.

Curing tape announced for concrete joints

A new concrete-joint curing tape is offered by the Presstite-Keystone Engineering Products Co.

Called ConSeal, the tape performs the following jobs on newly sawed and/or formed joints in portland-cement concrete paving:

1. Retains all the original moisture in the green concrete essential for curing the joint walls and edges.
2. Prevents infiltration of foreign matter into the joints until they can be sealed.
3. Eliminates need for running a saw blade through the joints prior to sealing to clear them of incompressible and other foreign matter.
4. Eliminates need for blowing joints with compressed air prior to sealing.

ConSeal consists of two parallel ribbons of mastic, set about 1½ inches apart, applied to a polyethylene tape, and protected by a glassine backing.

For further information write to the Presstite-Keystone Engineering Products Co., Dept. C&E, 39th and Chouteau, St. Louis, Mo., or use the card at page 18. Circle No. 33.

Hand sinker eliminates dusty drilling conditions

A new dry, dustless drill is announced by the Le Roi Division of the Westinghouse Air Brake Co.

Known as Model LHV45, the unit is said to practically eliminate steel sticking because cuttings are collected as drilling progresses.

Cuttings are drawn into 5-hole CRD or Vac-Nu-Matic bits, through hollow drill steel, into the drill chuck, and immediately out the side of the chuck housing.

Designed to operate with the Model LX-1 automatic dump dust-collector tank, the drill weighs 56 pounds, and has a 1-inch hex × 4¼-inch chuck. Length is 25½ inches. The drill and dust-collector tank operate at 80 to 90 psi.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, 1706 S. 6th St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 40.



The new Wagner compactor-dozer can be worked in either direction at equal speeds.

New compactor-dozer features dual controls

A new compactor-dozer designed to perform both functions at the same time is available from Wagner Tractor, Inc.

Air-cushioned steel compaction wheels are said to practically eliminate shock and vibration. Interchangeable rubber-tire wheels are also available.

This Wagner unit features dual controls and a reversible seat, permit-

ting the machine to be worked in either direction at equal speeds. Turning radius is zero.

Tilt and pitch of the heavy-duty dozer blade are hydraulically controlled from the cab.

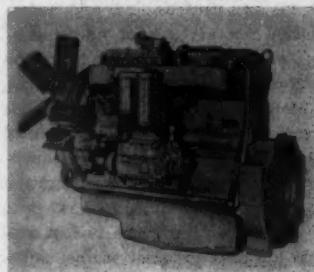
For further information write to Wagner Tractor, Inc., Dept C&E, P. O. Box 7444, Portland 20, Ore., or use the Request Card at page 18. Circle No. 97.



Announce two new models of heavy-duty diesels

Two new heavy-duty diesel engines are offered by the Engine-Material Handling Division of the Allis-Chalmers Mfg. Co.

One engine, the Model 21000, is turbocharged and develops 340 horse-



power at 2,000 rpm. The other, the Model 16000, is a naturally aspirated engine developing 230 horsepower at 2,000 rpm. Both are 6-cylinder 4-cycle in-line engines with 5 1/4-inch bore, 6 1/2-inch stroke, 844-cubic-inch displacement, and 14.5:1 compression ratio.

With the exception of the turbocharger and its related parts, all engine components are interchangeable. Basic weight of the engines is about 3,000 pounds.

For further information write to the Allis-Chalmers Mfg. Co., Engine-Material Handling Division, Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 48.

Pumps handle capacities up to 70,000 gpm

The Peerless Type A pump, for handling water and other non-abrasive liquids in capacities up to 70,000 gpm, is available from the Peerless Pump Division of the Food Machinery & Chemical Corp.

According to the manufacturer, Type A characteristics permit pumping against heads up to 400 feet.

Horizontal split-case design permits ease of maintenance and inspection. Oversize shafts, heavy-duty ball bearings, and modern-design wear rings and shaft sleeves are said to protect against wear, afford a high factor of safety in operation, and assure reliable service and extended pump life.

For further information write to the Peerless Pump Division, Food Machinery & Chemical Corp., Dept. C&E, 301 West Ave. 26, Los Angeles 31, Calif., or use the Request Card at page 18. Circle No. 83.

This metal culvert pipe was buried for 40 years!

"LIKE BRINGING up a time capsule," the foreman said. "This culvert pipe was buried under a road in Pottawattamie County, Iowa, and we dug it up this year (1958) when we moved the road. The pipe was in excellent condition—could be used again."

The stencil on the corrugated metal was perfectly legible. U. S. Steel checked the heat number stenciled on the metal and found that the steel was made in 1918! The pipe was fabricated by the Nebraska and Iowa Steel Tank Company, now known as the Eaton Metal Products Corp. The culvert sheets were made by the American Sheet and Tin Plate Company, then a subsidiary and now part of U.S. Steel.

The pipe is two feet in diameter and 16 feet long. The steel was not corroded because the corrugated metal was protected by a coat of zinc. It wasn't crushed or cracked because corrugated metal pipe is *flexible*—it deflects under load and gains support from the compressed soil around it. This is why only corrugated metal pipe can stand the crushing weight of deep fill and the vibration and impact of heavy loads over shallow fill.

Write for our free book, "USS Culvert Sheets." It tells how to select correct structure sizes and offers suggestions on how to install the pipe. Write United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

USS is a registered trademark

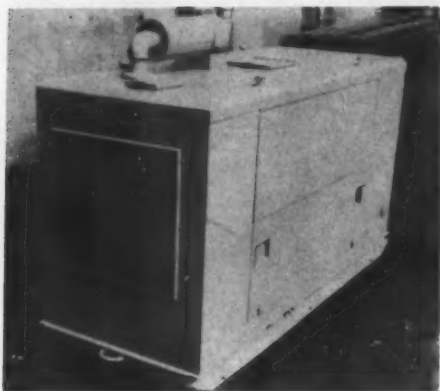


United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Warehouse Distributors
United States Steel Export Company

United States Steel

the Model
t-collector
unds, and
ch chuck
drill and
e at 80 to
write to
ghouse Air
06 S. 68th
e the Re-
le No. 90.





New generating plant delivers precise power

Jeta, Inc., announces a new 15-kw diesel-powered electric generating plant. This Jetapower unit features a mechanical governor that, in conjunction with the fuel-injection system, maintains frequency regulation of 1½ per cent or less, and a frequency recovery time of 3 seconds or less with any change in load from no load to full load.

Major features of this unitized design include an integral fuel tank of 12 hours' full-load operating capacity; a 3-way fuel valve for operation of the unit from either integral tank or external tank within a 10-foot suction lift from external source; automatic engine shut-down in event of low lube-oil pressure, high coolant temperature, or engine overspeed; and the ability of the generator to deliver 110 per cent of rated capacity for 2 hours continuously without exceeding rated temperature rise.

For further information write to Jeta, Inc., Dept. C&E, 957 Saw Mill River Road, Yonkers 2, N. Y., or use the Request Card at page 18. Circle No. 87.

Offer mechanical splice for conveyor belts

A new method for providing a high-tension mechanical fastener splice on conveyor and elevator belts is announced by Raybestos-Manhattan, Inc.

Designated Wedlok, this splice is said to have the same durability, flexibility, safety, and tightness as



a conventional vulcanized splice for operating tensions up to 700 pounds per inch of width rating on belts of five or more plies and thicknesses of ½ inch and over.

For further information write to Raybestos-Manhattan, Inc., Dept. C&E, 92 Townsend St., Passaic, N. J., or use the Request Card at page 18. Circle No. 38.

New small truck crane handles medium loads

A new hydraulically operated truck-mounted crane is announced by Teale & Co.

Easy to mount on any truck, including light pickups, the Handlift can be placed directly behind the cab, in the middle of the bed, or on the rear of the truck. It reportedly will lift 650 pounds with a 7-foot boom, or 450 pounds with a 10-foot boom.

The Handlift takes in up to 16 feet of line by means of a hydraulic

winching cylinder inside the boom. A second heavy-duty cylinder tilts the boom up and down. An optional hydraulic unit is available for swinging the boom.

The crane can be operated with truck power takeoff or by an auxiliary engine.

For further information write to Teale & Co., Dept. C&E, P. O. Box 368, Omaha, Nebr., or use the Request Card at page 18. Circle No. 11.

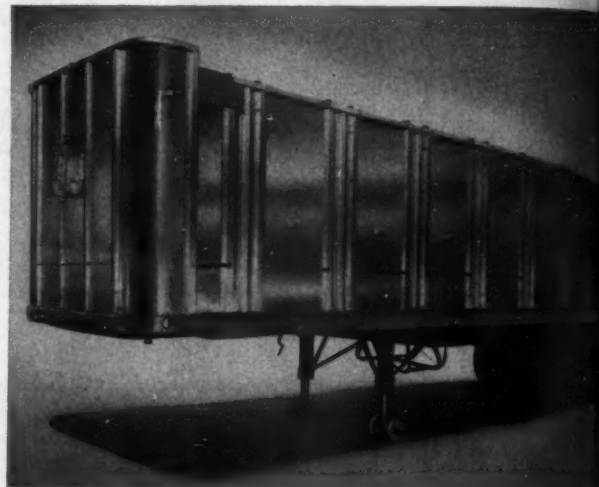
(Illustration on facing page)

NEWEST, BIGGEST TRAILERS

Every Kind Of Construction Trailer Is Here

NEW STEEL OR ALUMINUM WORKHORSE RACK PLATFORMS

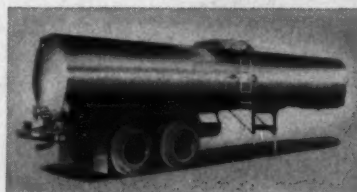
For Profitable Double Duty . . . These rugged, lightweight Fruehaufs are rough and ready for service as flatbeds hauling machinery, metal plate, and heavy installations or as stake and rack units safely moving damageable building materials. Both units are built with deep, rugged, steel main beams, front and rear cross members, corner castings, and bumpers. Both feature an 80" bolted front end. Options include: choice of steel or aluminum for outside rails, cross members, racks, and tarp bows . . . hardwood or aluminum floors . . . racks 48" wide x 60" high or 48" x 72" . . . tie rings in the floor . . . storage area at front for bows . . . all popular lengths . . . and single or tandem underconstruction. Racks are interlocking, with sturdy stake ends and convenient lifting bars. They can be removed separately. Lift out doors are hinged, and swing flush against sidewalls.



MORE HIGH CAPACITY UNITS IN FRUEHAUF'S RUGGED ROADBUILDERS



Lightweight Multi-Purpose Platforms



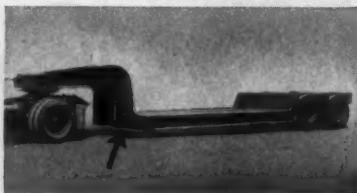
Steel and Aluminum Asphalt Tanks



Fabricated I-Beam Dump Trailers



Screw-Type Cement Tanks and Blow Units

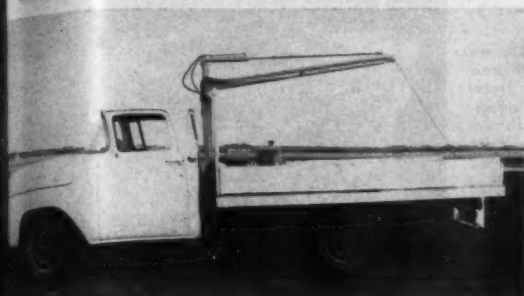


Removable Gooseneck Carryalls



Hopper-Type Dump Trailers

CONTRACTORS AND ENGINEERS



Featuring reported lifting capacity of 650 pounds on a 7-foot boom, the Teale Handlift truck crane is mounted on any truck.



Small and compact for easy handling on the road, the Model 310 produces asphalt mixes in the same way as large, stationary plants. It is designed to handle all types of paving aggregates from 3/4 inch down.

LE LINEUP FOR ROADBUILDERS

Here Fruehauf's New, '59 Line Of Higher Capacity Units!

NEW ALL-WELDED ALUMINUM FRAMELESS DUMPS

For Profitable Extra Payload . . . These advanced, lightweight units provide lower tare weight and thus vastly increased payload and profits for the operator. The body is of rugged, boxed construction with grid-type understructure. Stability is outstanding. The efficient dumping system features 8" diameter telescopic hoist, 195" power stroke, automatic by-pass valve, twin line hydraulic system, and 25 gallon pump.

NEW SINGLE AXLE CABLE DUMPS

For Low-Cost Hauling . . . These new Fruehauf-Schenck single axle units are up to 1000 pounds lighter and considerably less in cost than previous models. There is a 25% increase in dumping speed and 22% reduction in line pull. The heavy center frame is eliminated—the body shell carries the load. Unique wrap-around girdles provide strength and rigidity. Widespread arms assure maximum stability. The cable dumping mechanism is simple and inexpensive to maintain. Single axle unit shown has 10 cubic yard water level capacity, automatic tail gate. Tandems in all capacities are also available.



NEW, LOWER-PRICED 5-TON CARRYALLS

Lightweight And Tough . . . The strength of a new machinery unit is built into 2 beams less than 4. There is a shorter gooseneck and, yet the same turning clearance from the king pin because the main frame members have been moved to the outside of the unit. The heavier outside frame provides extra strength for side-loading operations. 96" loaded loading space ahead of the drop provides room for accessory loads. Options include outriggers, side loading ramp brackets, and more. Carryalls available in capacities to 75 tons.



For Forty-Five Years—More Fruehauf Trailers On The Road Than Any Other Make!



World's Largest Builder of Truck-Trailers
FRUEHAUF TRAILER COMPANY
10949 Harper Avenue • Detroit 32, Michigan

Send full facts with no obligation on Fruehauf units circled:

PLATFORMS DUMPS CARRYALLS OTHERS

NAME

COMPANY

ADDRESS

CITY

STATE

For more facts, use coupon or Request Card at page 18 and circle No. 309

Portable asphalt plant produces hot, cold-mix

The Patch-Mix Model 310, a complete, mobile asphalt plant built on a 2-wheel trailer, is available from the Wyllie Mfg. Co., Inc.

The unit is equipped with a rotary dryer, which dries the aggregate while the pugmill is mixing previous batches of aggregate with asphalt. It has a built-in heated asphalt tank, as well as a volumetric asphalt measuring system that can charge a measured amount of asphalt into the pugmill each time the aggregate is batched.

The Model 310 will handle all types of paving aggregates from 3/4 inch down. The asphalt system is designed for use with all asphalts, and will produce both hot and cold-mixes. The machine is also suitable for remixing stockpile material.

For further information write to the Wyllie Mfg. Co., Inc., Dept. C&E, P. O. Box 7086, Oklahoma City, Okla., or use the Request Card at page 18. Circle No. 29.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

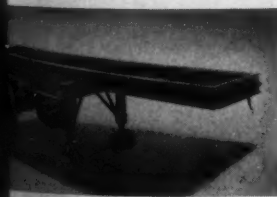
New gasoline engine increases grader power

Allis-Chalmers announces a new 4-cylinder gasoline engine for its Model D motor grader, designed to provide 58 horsepower at 1,650 rpm.

According to the company, maximum power and fuel economy are provided by its accurately controlled combustion chamber formed by crater-shaped pistons. Turbulence thoroughly mixes and vaporizes the air-fuel charge, causing complete combustion. Peak performance and even firing are obtained with the use of "regular" gasoline.

Compression ratio is 7.25:1.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 98.



Tandem Axle Dump Chassis



Trailers, including Connector-Type

DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process... successfully used for more than a Quarter Century.



Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you.

SWICK-GUTH CO.

McPHERSON, KANSAS • FORMERLY GUTH CO.

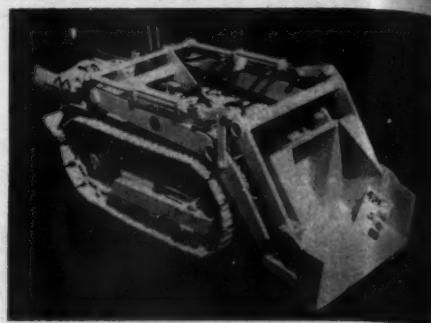
"SPECIALISTS IN WELDING"

"DIESEL CASTINGS"

For more facts, use Request Card at page 18 and circle No. 310

Product Parade

A 15-hp reversible air motor powers the new Machinery Center front-end loader and dozer. Designed for both underground and surface work, the unit is offered with bucket capacities of $\frac{3}{4}$, $\frac{1}{2}$, and 1 cubic yard.



New loader-dozer is powered by air

Machinery Center, Inc., has available an air-powered front-end loader and dozer for underground and surface work.

This crawler-loader is designed to dig, bulldoze, and dump at all levels, and to perform under headings as low as 4 feet. It has a 6-foot reach.

A 15-hp reversible air motor powers the machine, offering travel speeds up to 5 mph. Air requirement is 315 cfm at 80 psig.

The unit is equipped with hydraulic steering clutches and hydraulic bucket control, and features simple conversion to full dozer unit.

Four models are available, in bucket capacities of $\frac{3}{4}$, $\frac{1}{2}$, and 1 cubic yard.

For further information write to Machinery Center, Inc., Dept. C&E, Salt Lake City, Utah, or use the Request Card at page 18. Circle No. 88.

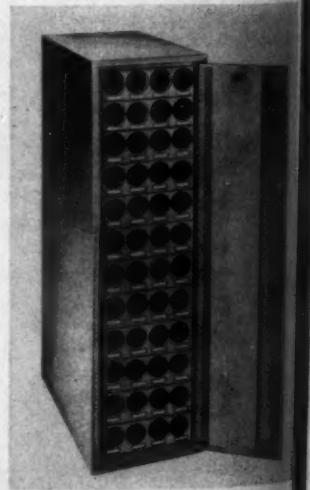
New tube filing system holds rolled drawings

A tube filing system for rolled prints, charts, drawings, maps, and tracings is offered by the Plan Hold Corp.

The roll file consists of modular steel-encased Duro tubes in units of four tubes per file. Each file unit measures 12 inches wide x 4 inches high x tube length. These 2 $\frac{1}{2}$ -inch inside-diameter tubes are available in lengths of 27 and 33 inches.

According to the company, the roll file units can be assembled for desk top or undersurface table mounting.

For further information write to



the Plan Hold Corp., Dept. C&E, P.O. Box 1038, South Gate, Calif., or use the Request Card at page 18. Circle No. 52.

HEAVY-DUTY SCREED SUPPORTS

Overpasses and Underpasses

THREADED COIL TIES

Engineering Structures

TILT LOCK CLAMPS

Heavy-Duty Forming

4-STRUT COIL ROD ANCHORS

Temporary or Permanent Anchorage

PLATE HANGER FRAMES

Bridge Superstructures

RISER-FRAMES

Stadiums and Grandstands

PICK-UP INSERTS

Tilt-Up Work

SNAP TIES

Ordinary Foundations

SUPERIOR

One Source For All Accessories For Dependable Concrete Forming

These are examples of the numerous types of form ties, anchors, inserts, and other items in Superior's most complete line of concrete accessories. The illustrations show the variety of concrete form work and related jobs in which Superior accessories are used. All items are designed to provide the most dependable and efficient forming methods.

WHENEVER YOU ARE PLANNING FORM WORK...
Superior's technical assistance is available to prepare suggested layouts. Call or write to nearest address shown below.

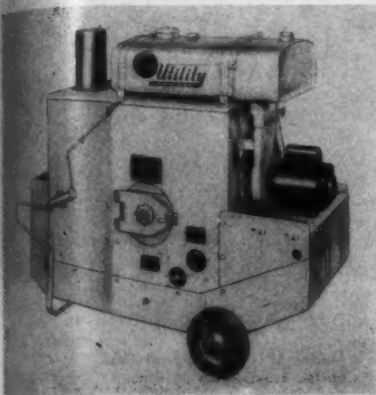
SUPERIOR CONCRETE ACCESSORIES, INC.

9301 King St., Franklin Park, Ill. (A Suburb of Chicago)

New York Office
1775 Broadway
New York 19, N. Y.

Pacific Coast Plant
2100 Williams St.
San Leandro, Calif.

For more facts, use Request Card at page 18 and circle No. 311



Attachment allows heater to operate at 50 below

A new attachment reportedly permits the Herman Nelson portable utility heater to operate in a temperature range to minus 50 degrees F.

Called the Arctic base attachment, it consists of an insulated false bottom on the heater cabinet that permits recirculation of a portion of the heated discharge air back to the heater inlet; this produces the effect of preheating the inlet air so that the final, usable air emerges at decidedly higher discharge temperatures.

An additional advantage is the prevention of the formation of frost or rime ice, which are apt to clog a heater's combustion and ventilation air fans.

The heaters, with attachment, are available in both electric and gasoline-engine-powered models, and can be used with or without the 3-wheeled towing trailer.

For further information write to American Air Filter Co., Inc., Dept. PD, Dept. C&E, 215 Central Ave., Louisville 8, Ky., or use the Request Card that is bound in at page 18. Circle No. 34.

For EXTERNAL VIBRATORS Specify McCARON BROS.

JETSHAKER
Pneumatic External Vibrator



Unloading cement from Hopper air

JETSHAKER Pneumatic EXTERNAL VIBRATOR FOR:
Precast Concrete Forms and Scaffolds, Concrete Pipe Forms, Mine and Railroad Car Shakers, Vibratory North Compactors, Tunnel Forms, Bridge Piers, Concrete Filling, Platforms, Decks & Pavement Trunks, Silos, Tanks, Bins, Hoppers.

JETSHAKER is a low maintenance pneumatic vibrator for external use, having only one moving part, an air jet driven rotary eccentric turbine of special bronze alloy. The only wearing parts are 2 ball bearings.

JETSHAKER costs a mere of 2600 lbs., 8,000 ft. per minute on all size forms. Air consumption is 25 to 40 c.f.m. @ 100 psi at unit.

Write for complete details

MCCARON BROTHERS
14700 East Ramona Blvd.
Baldwin Park, California

JETSHAKER EASTERN
4220 Bldg Road, Cleveland 9, Ohio

For more facts, circle No. 312

For handling concrete, a new floor hopper

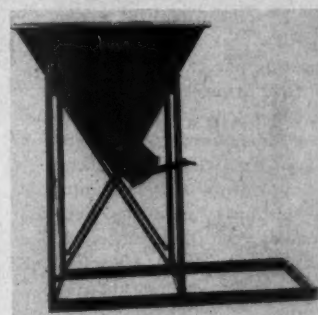
The Buck Equipment Corp. offers a new floor hopper for concrete.

The hopper has a 41-cubic-foot capacity, which can be increased to 61 cubic feet by adding a 20-cubic-foot riser atop the unit.

Also available for the hopper is a fitted lip, which gives extra reach from the building and permits use of the Buck poop deck—a combination platform and self-dumping bucket.

The hopper comes with either a 33 or 41-inch deck-to-gate height. Overall height is 8 feet or 8 feet 8 inches.

For further information write to the Buck Equipment Corp., Dept. C&E, 720-X Anderson Ferry Road,



Cincinnati 38, Ohio, or use the Request Card at page 18. Circle No. 103.



"Nothing makes low bidding as easy as **TORQMATIC DRIVE**"

In deals where it's far easier to lose your shirt than make a bundle, TORQMATIC DRIVE economies are a big help in close bidding.

You can count, for example, on handling the job with fewer pieces of equipment—and on using the type of king-sized equipment that TORQMATIC DRIVES make possible.

You can depend on far lower repair costs. For even new drivers can handle this equipment like experts without the usual stress and strain.

Even routine maintenance is cut back—sharply. For the engines in TORQMATIC equipment can't be lugged—overhauls can be scheduled a lot farther apart.

So it's easy to see why TORQMATIC users are low bidders on so many of the biggest, most profitable jobs. They

simply have the kind of equipment that can do the work most efficiently and at the lowest cost.

They've discovered that TORQMATIC DRIVES are available in nearly every kind—and over 100 makes—of construction equipment. Check into it for yourself with your equipment dealer—or by writing:

Allison Division of General Motors, Indianapolis 6, Indiana
In Canada: GENERAL MOTORS DIESEL, LTD., London, Ontario

Allison 
TORQMATIC DRIVES
THE MODERN DRIVE FOR MODERN EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 313

Product Parade

New generator overdrive maintains battery charge

A generator overdrive system said to assure peak generator performance and constant battery charge for all types of automotive vehicles, even at curb idle with all accessories operating simultaneously, is offered by Consolidated General Products.

Called Gen-O-Drive, the unit works by instantly increasing generator rotation when the engine is idling or running at low speed. As engine speed increases, Gen-O-Drive automatically returns the generator to its normal operating rate.

Maximum current availability is coupled with constant voltage regulation, according to the manufac-

turer, to prevent battery overcharging and preclude sudden surges of high voltage that might damage electrical components.

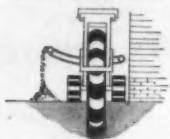
Gen-O-Drive requires less than ¼ horsepower to operate, and is easily attached to any automotive generator: standard, heavy-duty, or ac. No special tools or complicated mountings are needed, and all components required for installation are furnished with the unit.

For further information write to Consolidated General Products, Dept. C&E, P. O. Box 7425, Houston 8, Texas, or use the Request Card at page 18. Circle No. 22.



Nothing digs trench in the city like a Cleveland 'Baby Digger'

PUTS TRENCH WITHIN
20 INCHES
OF A PARALLEL WALL



MORE THAN 30 USABLE
COMBINATIONS OF
CRAWLER AND
DIGGING WHEEL SPEEDS



GIVES YOU THE
RIGHT COMBINATION
OF POWER AND SPEED
FOR EVERY SOIL
AND JOB CONDITION

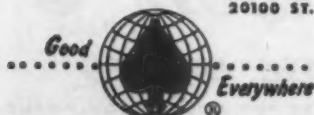
If your jobs involve city and suburban trenching, a trim maneuverable Cleveland 92 is the trencher for you. This "Baby Digger" has the practical features and advantages that give you greater, more economical production in crowded areas...*more trench...in more places...at less cost.*

- Only 4' 6" wide over its crawlers.
- Shiftable, reversible conveyor.
- Digs easily past trees, poles, fences, etc.
- Digs 10" to 20" wide...down to full 5' deep.
- Full crawler mounting...completely maneuverable...perfect balance and stability...easy on lawns, sidewalks, etc.
- Finest crawler on any trencher...long-lived...non-packing...easy-rolling...friction-free...sealed bearings...200-hour lubrication.
- Easily portable...hustles from job to job at safe, legal-limit truck speeds.
- Used on thousands of miles of trenching for gas...water...sewer...telephone...electric power...building footings...airport, highway construction.

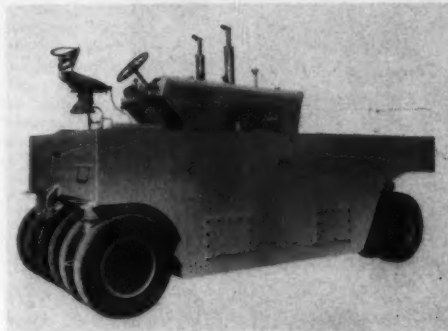
fast • accurate • clean • dependable
nothing digs trench like a Cleveland

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO



For more facts, use Request Card at page 18 and circle No. 314



The weight of Tampo's Model SP1030 self-propelled pneumatic roller can be varied from 10 to 30 tons.

Self-propelled roller has variable weight

The Tampo Mfg. Co., Inc., announces a new variable-weight pneumatic-tire roller of 30-ton capacity. Designed for maximum density rolling of asphaltic mats, proof rolling of subgrade, and compaction of select material courses, the Model SP1030 features torque-converter power and an automatic clutch reverse mechanism for fast reversing cycles.

According to the manufacturer, stability and flotation, provided by the flexibly mounted 11-wheel arrangement, prevents ridging of loose

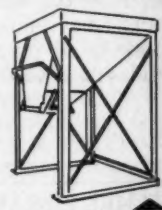
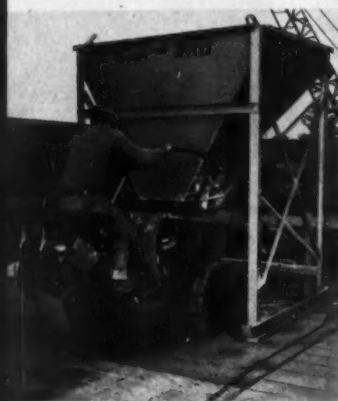
material and permits high unit pressure-rolling of lower-bearing-ratio materials in subgrade and embankment work with minimum change of ballast load.

The roller's weight can be varied from 10 to 30 tons. Other specifications include a 94-inch rolling width, 5 speeds in both forward and reverse, and a maximum speed of 17 mph.

For further information write to the Tampo Mfg. Co., Inc., Dept. C&E, P. O. Box 4248, Station A, San Antonio 7, Texas, or use the Request Card at page 18. Circle No. 63.

designed WITH CONCRETE IN MIND

GAR-BRO CONCRETE HOPPERS



FLOOR HOPPER
RECEIVING HOPPER



...serve a dual purpose!

For maximum utility, Gar-Bro Concrete Hoppers are made in three units—(1) a bin, (2) a leg stand and (3) a collar for increasing capacity. Thus, the leg stand converts the Receiving Hopper to a Floor Hopper. Gar-Bro Hoppers are used as supply bins for carts; they prevent delays of truck mixer and placing crew and have many other uses. Made in vertical front and center discharge types, there are single gate models ranging in capacity from 28 to 76 cu. ft. and double gate models ranging from 2 to 5.7 cu. yds.

Get these special Gar-Bro features: (patented) non-jamming, grout tight, double clamshell gates. Approved vertical discharge.

See your Gar-Bro dealer or write for catalog.

GAR-BRO MANUFACTURING CO., Los Angeles, Calif. • Peoria, Ill.
General Offices: 2415 East Washington Blvd., Los Angeles 21, Calif.

GAR-BRO CONCRETE HANDLING EQUIPMENT



THE WORLD'S MOST COMPLETE LINE

For more facts, use Request Card at page 18 and circle No. 315

CONTRACTORS AND ENGINEERS



This truck-mounted, continuous-full-swing Samson digger has a surface reach of 22½ feet; down pressure at the bucket teeth is 6,000 pounds. A Continental 54-hp engine supplies the power.

Carrier-mounted digger offers continuous swing

The Samson Model FS-1 excavator, a carrier-mounted, continuous-swing unit, is available from Avery Tractor Inc.

Power for the machine is supplied by a Continental Model F226 6-cylinder motor, developing 54 horsepower at 1,800 rpm.

Buckets from 16 to 36 inches are

available. The backhoe loading height is 12 feet; shovel-bucket loading height 15 feet; surface reach, 22½ feet; and digging depth, 16 feet.

For further information write to Avery Tractor Inc., Dept. C&E, U. S. Route 20, West Lebanon, N. Y., or use the Request Card at page 18. Circle No. 46.

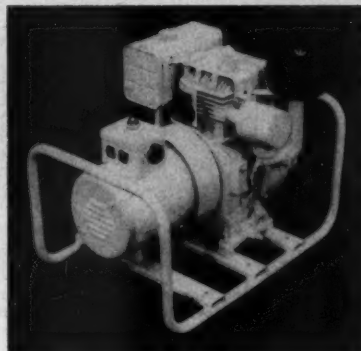
To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

Offer portable generator with 2,500-watt output

A new electric generator is announced by the Pioneer Gen-E-Motor Corp.

The Model M-2500-P has an output of 2,500 watts and weighs 157 pounds. Features include recoil starting, duplex and twist-lock receptacles, a pilot light, and a sturdy carrying frame. In addition, vibration is said to be practically eliminated due to the use of special shock pads.

For further information write to the Pioneer Gen-E-Motor Corp., Dept. C&E, 5841-49 W. Dickens Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 37.



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HIGH DEGREE
SOIL
COMPACTION



BARCO RAMMERS are THE ANSWER!

YOU can't get high degree SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches — on all kinds of construction jobs: Toll Roads, Freeways, and Highways; Air and Missile Bases, Hydroelectric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION — On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION — We will be glad to arrange a demonstration for you; see our nearest distributor or write.

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For more facts, use Request Card at page 18 and circle No. 317

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Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

MODEL MSO-D

Multiple axle drop bed semi, capacities 35 through 75 tons. Drop deck or flat deck.

MODEL T-8-18

16 or 18 foot length between the wheel tilt trailer. 8-10 ton capacity.

MODEL GTX

Tandem axle, 6 dual wheels. Capacities 25 through 45 tons. Flat or drop deck.

MODEL KSO-D

Dual axle drop bed semi, capacities 15 through 30 tons. Drop deck or flat deck.

MODEL GPR

Removable gooseneck. Tandem, triple or trunnion axles. Flat or drop decks, or as beam trailers.

MODEL TT

Heavy-duty tilt trailer. Capacities 6, 8 and 10 tons.

MODEL PX-O

Heavy-duty, self-loading tandem axle oil field float.

MODEL XT

Tandem axle tilt trailer (low type), capacities 13 through 20 tons.

MODEL PTX

Heavy-duty tandem axle with adjustable bolsters. Telescopes from 16' to 30' from tractor.

MODEL PX

Heavy-duty tandem axle, spring mounted platform or float.

MODEL GPX

Tandem axle. Capacities 16 through 35 tons. Drop deck or flat deck.

MODEL KS-F

Single axle, flat bed semi, capacities 10 through 20 tons. Drop deck or flat deck.

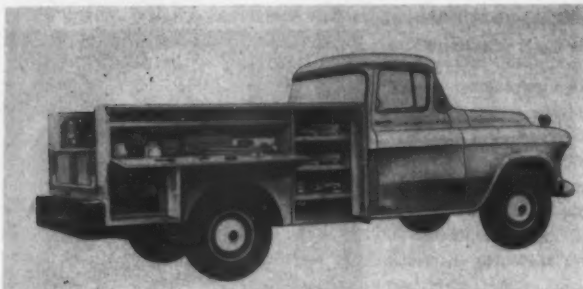


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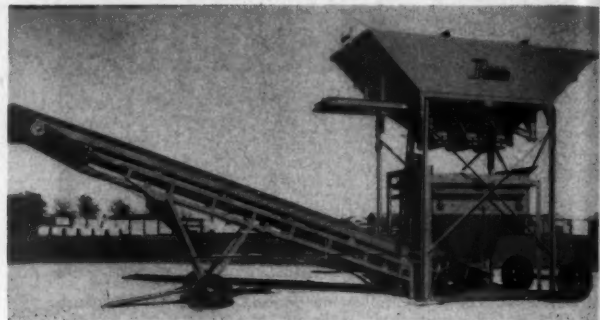
Send Today
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NEW catalog showing COMPLETE line for your transportation needs.

For more facts, use Request Card at page 18 and circle No. 316



The new series of utility truck bodies announced by Reading Body Works, Inc., features removable shelf and tray dividers designed to permit changing the vehicles' interior compartment arrangements to suit daily requirements. Write to Reading Body Works, Inc., Dept. C&E, 420 Gregg Ave., Reading, Pa., or use the Request Card at page 18. Circle No. 69.



The new Ross overhead bin.

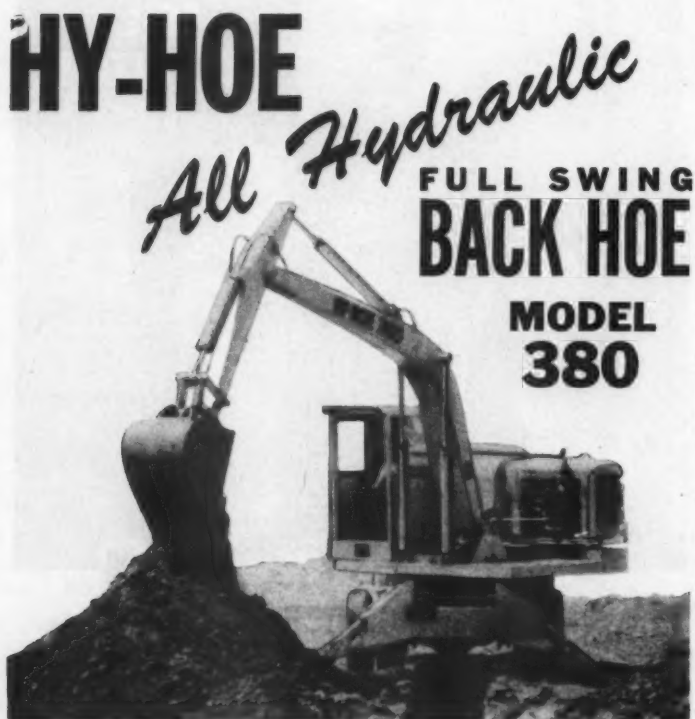
Overhead bin available for portable batch plant

The newest member of the Ross Porta-Plant line, a unit designed for high-production concrete batching, is a portable 30 x 3-foot compartment overhead bin.

The unit is designed for use with either the 4 or 6-yard Porta-Plant. The compartment overhead bin is

said to be a highly maneuverable unit, and comes complete with sheets and axle for legal highway travel.

For further information write to Ross Porta-Plant, Dept. C&E, Box 446, Brownwood, Texas, or use the Request Card at page 18. Circle No. 102.



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- MOUNTS ON YOUR TRUCK (2 1/2 ton or larger)



The new Hough vibratory-compactor attachment for all 4-wheel-drive Payloaders.

Vibratory-compactor attachment for loaders

The Frank G. Hough Co. announces a vibratory-compactor attachment for all 4-wheel-drive Payloader tractor shovels.

This self-contained and self-powered attachment uses the Jackson

electric system, and can be interchanged with the bucket in a matter of minutes.

A heavy-duty air-cooled motor and generator unit drives electric-motor vibratory units on four compactor

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The ability of the Acker-Denison Core Barrel to obtain undisturbed samples from sand, hard clays, silt and other difficult cohesive soil conditions accounts for its worldwide acceptance by Soil Engineers.

ACKER-DENISON CORE BARREL —PROVED AND IMPROVED

While the basic features of the original Denison are duplicated in the samplers manufactured by Acker, numerous improvements suggested by Acker's 40 years of soil sampling experience are incorporated in the new Acker-Denison. It is these improvements that make the Acker-Denison even more useful and efficient than before!

Remember, no other manufacturer can offer the improved performance and exclusive patented features of Acker's new Denison Core Barrel. This proud achievement of Acker development and progress is exclusively Acker!

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pads. Each of the pads delivers up to 4,300 3-ton blows per minute.

The total compacting width of the unit is 10 feet. This width extends beyond the Payloader tread and permits compaction close to side walls and borders. Any of the four shoes can be quickly detached from the mounting and used as a manually guided, self-propelled unit to compact hard-to-reach areas.

The regular hydraulic boom control of the Payloader raises and lowers the attachment. All operating compactor controls are handled from the driver's seat.

This compaction unit is recommended for granular-soil subbases, and for the base courses of sand, gravel, rock or slag in waterbound and penetration macadam construction.

For further information write to The Frank G. Hough Co., Dept. C&E, 762 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 96.

New method for pneumatic handling of bulk cement

A new method for pneumatically handling bulk cement will soon be announced by Engineered Equipment, Inc.

Using the new E/E system, a 125-barrel truck can be unloaded in 30 to 35 minutes, depending on the height to which the cement must be raised. This new method, according to the manufacturer, eliminates maintenance problems that occur in elevators and screw conveyors.

For further information write to Engineered Equipment, Inc., Dept. C&E, 1001 Linden Ave., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 70.

For more facts, circle No. 320→

Portable steam cleaner is fully automatic

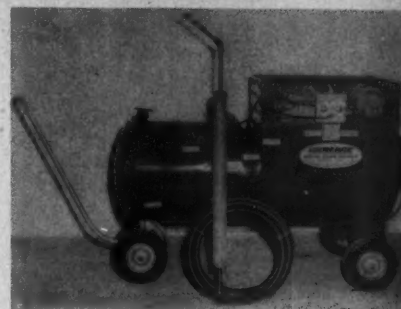
A completely portable motor steam cleaner featuring push-button control is announced by Electronics, Inc.

Known as Electro-Magic Model 100, the unit reportedly produces up to 150 pounds of steam pressure in 3 minutes. It connects to any 110-volt ac outlet; automatically mixes soap and water in a self-contained tank.

Operation is said to be safe and simple, and requires only one man.

The unit is 32 inches high, 42 inches long, and 20 inches wide.

For further information write to Electronics, Inc., Dept. C&E, E. Highway 50, Vermillion, S. Dak., or use the Request Card at page 18. Circle No. 44.



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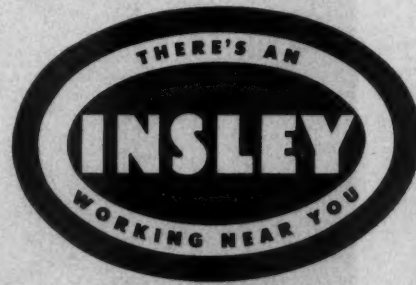
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For more facts, circle No. 321

MARCH, 1959



The toughest job for Northwest Construction Co., Seattle, on the freeway construction job in Olympia was building a dike across the end of Moss Lake, which is actually a peat bog. An Allis-Chalmers tractor-dozzer at left is pushing into place a rock that will hold back the peat from the rest of the lake. In the background is one of the freeway overpass structures.

Peat excavation problem solved by change in methods

Execution of a deep peat and muck deposit in the bottom of Moss Lake, as part of a freeway construction project in Olympia, Wash., was made especially difficult by two factors. Crisscrossed throughout the deep lake-bottom muck were a large number of huge old logs, many of them still sound. In attempting to remove the logs, the excavating equipment vibrated the entire plastic mass of muck, causing it to flow into the excavation almost as fast as it could

be bailed out by the operators.

The operation was suspended and, after a thorough study of the situation by the Washington Department of Highways and the contractor, Northwest Construction Co., Seattle, a change was agreed upon. The change order authorized the construction of a stone dike across the end of the lake to cut off the area to be excavated and confine the remainder of the muck in place.

Northwest at once let a subcontract

to Strong & Macdonald, Inc., Tacoma, Wash., to supply the rock. Quarry-run rock, of the largest sizes that could be handled on trucks, was hauled 2.2 miles from the quarry and end-dumped into the muck on the line that marked the outer limit of the proposed excavation.

The heavy rock sank right down into the soft material, forcing the muck up on both sides. As load after load was dumped and pushed into place by an Allis-Chalmers HD-20

tractor-dozzer, the dike gradually rose above the muck. As the dike progressed out into the lake, the dozer shaped up what small rock remained on top to make a roadway. The rock trucks turned around at the edge and backed out on the dike to dump their loads at the end.

Clams dig muck

When the dike was completed, the general contractor moved back into the area with two Koehring clam

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**FOR QUARRYING,
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B-1082



Rock first sank into the muck, but as more was dumped and the dike rose, this A-C HD-20 tractor-dozzer shaped the small rock at the top to make a roadway for trucks.



Another and shallower peat deposit is excavated by a Koehring 605 crane with an Owen 1½-yard bucket while Mack dump trucks bring material for backfilling.

cranes to continue the excavation. Both cranes used 1½-yard clamshell buckets, one a Johnson and the other an Owen.

In the initial phase of this excavation, Northwest had first pumped the small lake down, lowering the water level 15 feet. A Stang 10-inch pump was instrumental in pulling the water level down. A Jaeger 6-inch pump maintained the lowered water level against the inflow from a number of springs during excavation work.

The Koehring cranes clammed out the muck into a fleet of Mack 8-yard dump trucks that hauled to a waste area. When one of the rigs encountered one of the submerged logs, the operator probed around until he was able to grasp the log with the bucket. Then, by pulling and shaking, the rigs were able to bring the logs to the surface so that they could be snaked out by a tractor.

Disposing of the muck in the limited waste area required some in-

genuity on the part of the contractor. Since there was not enough room to simply dump one load after another on the ground, the contractor used a Koehring 304 crane, together with a drag bucket, to carry the material up into a large pile. The crane, operating through a snatch block on a deadman that was set ahead, picked up the muck as the trucks dumped.

Although the muck in the lake bottom went down as deep as 50

feet, the contractor was able to complete the excavation without too much difficulty. The excavation was backfilled with sandy material obtained from nearby cuts.

Freeway through city

This \$700,000 contract provided for a mile of grading and two separation structures, an overpass and an underpass. These were sublet to John Alexander, Seattle.

The grading contract included the

HYDRAULIC SIDE DUMPS - 20, 30, 40 TONS!

New earthmoving,
rock hauling giants
with mighty appetites
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AUTOMATIC DROP-DOOR
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For more facts, use Request Card at page 18 and circle No. 322

MARCH, 1959



A large part of the excavation on the job was moved by a spread of C Tournapulls. One of the rigs is given a push on a downhill grade by an Allis-Chalmers push-tractor.



A Michigan 175A tractor shovel loads sand into a Mack dump truck for use at one of the areas to be backfill.

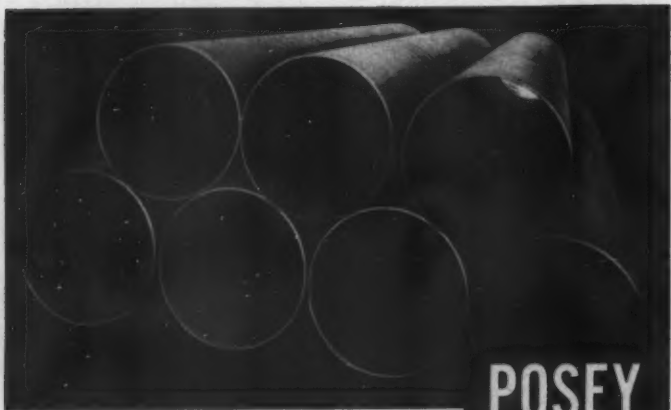
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— Tunnel and Mine Equipment Division

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excavation and wasting of 100,000 cubic yards of peat and muck from Moss Lake and several other deposits, together with the handling of approximately 700,000 cubic yards of common excavation in roadway cuts and fills.

The grading work took on a patchwork appearance as the contractor kept the crews busy while working out a plan to curtail the effects of wet weather. Silty and clayey materials were stripped off the cuts wherever possible and placed in available fill areas. When sand was encountered, the crews shifted operations to another site, leaving the sandy materials for backfilling the peat beds. The sand areas also provided places to work when the weather was too wet to work in finer soils.

Five C Tournapulls, together with two Allis-Chalmers HD-20 push-tractors, two Cat D6 and two D8 tractors with dozers, sheepsfoot rollers, and a Cat 12 motor grader were on the job. A Michigan 175A tractor

shovel was used to load Mack dump trucks with sandy material for backfilling the peat excavations.

When the dirt-moving operation went into high gear, the contractor moved in seven more Tournapulls. Two Cat D9 push-tractors came along to help the HD-20's, and additional supporting equipment was also used.

Personnel

Don Vizzare, superintendent, supervised the project for Northwest Construction Co. The foreman of the grading spread was A. J. Burrows. The master mechanic for the contractor was Cliff Marshall.

Representing the Washington Highway Department on the project was resident engineer Vern Doney. For the Olympia District of the department, J. C. Claypool is district engineer and Don McMurray, construction engineer. Construction engineer for the department is E. C. Simpson. Director of Highways is W. A. Bugge.

The End

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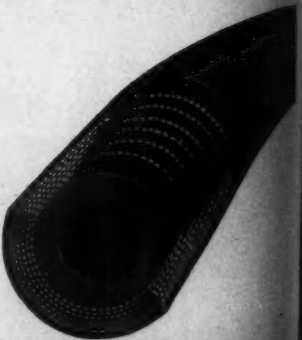
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USE



Ever

MARCH



Hot-oil system for asphalt plant also heats stockpile pavement

Electric heating and a hot-oil system provides Highway Construction Service Co., Lombard, Ill., with a flexible all-weather cold-mix asphalt plant.

Heat is obtained from two 84-kw multipass electric heaters engineered and manufactured by the Hynes Electric Heating Division, Turbine Equipment Co., Mountainside, N. J.



Two Hynes electric resistance units heat the oil used for the system. The complete heating unit can be removed through the terminal box of each 84-kw packaged heater without the need for disconnecting fluid lines or conduit.

Each packaged heater contains seven electric heating elements, each element consisting of resistor, insulated supports, and terminals for connecting the resistor to electric power.

Two heaters are adequate to melt snow from the loading area. By set-

ting the thermostats at a predetermined temperature, it is possible to heat or maintain asphalt from 75 to 600 degrees F, thus making it adequate for hot-mix as well as cold-mix plant operations.

The plant is unique because of the pavement heating system. Hot oil from the electric heaters flows through a network of 1-inch pipes set in concrete. The network is laid out in five sections, each of which can be heated independently of the others by means of a centralized system of valves. The truck approach pavement is heated to prevent the accumulation of snow; the storage areas are heated to facilitate handling of stockpiled material. One storage section is heated at a time.

The heaters are equipped with controls for 3-stage operation. This permits a flexible, versatile, and economical use of electricity. The heater is designed with oil passages to provide a turbulent stream of light heat-transfer oil that flows over the surface of the heater at a high constant velocity. The element design of low watt density and heater design of high constant velocity eliminate the possibility of any oil carbonization.

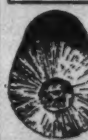
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A unique heating system prevents aggregates from freezing at the Highway Construction Service Co. asphalt-plant setup at Lombard, Ill.

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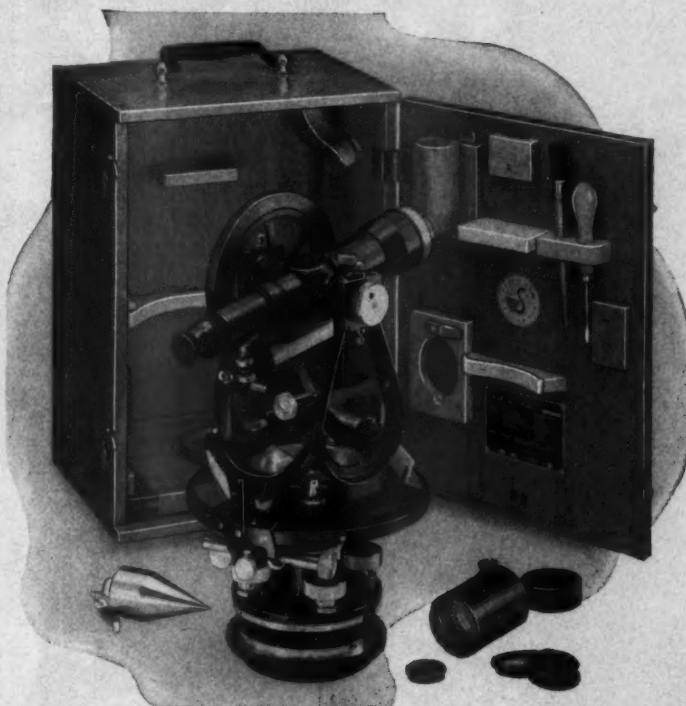
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3" wide, 15" long, with two bolts. Fits your present frame.

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They have been added to the famous Bruning optical line because they offer one of the rarest surveying values available. They have been thoroughly tested and evaluated by experts in the surveying field.

The optics in **PATH** instruments are unsurpassed by any instrument in any price range! Japanese lenses, now recognized as among the finest in the world, provide superior

definition, distinct and powerful magnification, unwavering accuracy. The instruments are built of the finest materials available under extremely high quality control standards. They have proved their dependability under extreme field conditions of heat, cold, and dust.

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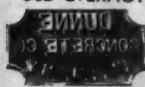


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MARCH, 1959

40TH ANNUAL MEETING
ASSOCIATED EQUIPMENT DISTRIBUTORS
The Conrad Hilton — Chicago — January 26-29, 1959
PHOTOGRAPH BY CONTRACTORS AND ENGINEERS MAGAZINE
DONALD V. BUTTENHEIM, PUBLISHER

Better management at AED

What happened to profits in '58? What can be done to increase them in '59? These were two of the key questions that speakers of the 40th annual meeting of Associated Equipment Distributors attempted to answer.

Speakers and panelists generally agreed that the volume of business during the past year had been satis-



F. J. Fitzpatrick,
1959 AED president.

factory but that net profits had been extremely low. The lower profits were caused, they claimed, by cutthroat competition among distributors. Profits were further reduced by the higher cost of doing business. Company earnings were also being slowly eaten away by inflation.

Although there was no simple answer to the problem, speakers suggested holding present prices. To reduce the cost of doing business, they recommended more efficient management. They urged closer cooperation between distributor and manufacturer in the fields of merchandising, financing, and equipment warranties. It was suggested that delegates combat inflation by supporting the administration's balanced-budget program.

Although speakers pointed to problems aplenty, consensus of opinion was that '59 would be a brighter year. With the recession on the wane and



Herb Daniels uses model as prop in his business session talk, "Ideas for the Asking," on Wednesday morning.

CONTRACTORS AND ENGINEERS

Newly elected members of AED's 1959 executive committee are (left to right): P. D. Hermann, executive secretary; R. F. Newlin, vice president; J. A. Benson, executive vice president; F. J. Fitzpatrick, president; H. J. Mayer, vice president; J. A. Young, vice president; Braxton Blalock, Jr., treasurer.



Management key to profits at AED annual meeting

profits in '59
increase them
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been satis-

construction on interstate highways getting into gear, there should be enough business for everybody, it was believed.

Attended by 4,170 delegates from the United States and Canada, the five-day convention was the second largest in the association's history. At the Conrad Hilton Hotel in Chicago from January 25 to 29, manufacturers of construction equipment and their distributors got together to work out their mutual problems.

Many dealers met with manufacturers at their exhibit booths in the lower lobby of the hotel. At Condex, as the exhibit was called, some 90 manufacturers were represented.

New officers

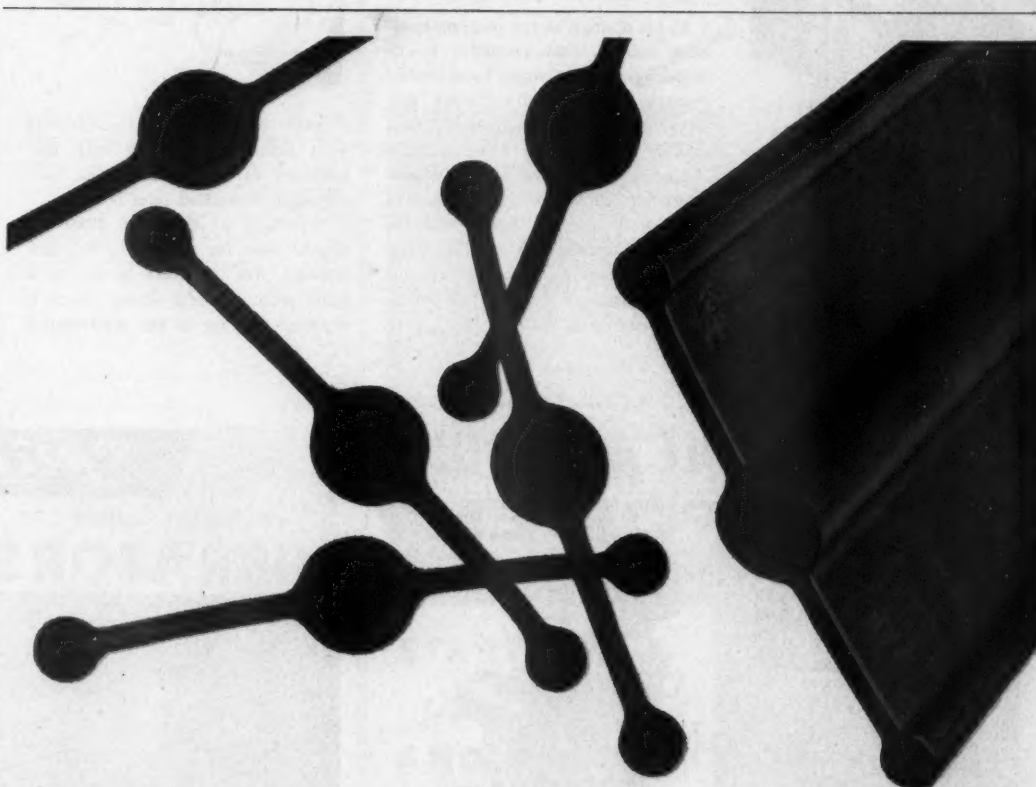
Elected to head AED for the coming year was F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass. J. A. Benson, Benson Tractor Co., Houston, Texas, stepped up to the post of executive vice president. Other officers elected were: R. F. Newlin, Newlin Machinery Corp., Kansas City, Kans., vice president; H. J. Mayer, Western Machinery Co., San Francisco, vice president; J. A. Young, R. J. Fyfe Equipment Ltd., Regina, Sask., Canada, vice president; Braxton Blalock, Jr., Blalock Machinery & Equipment

(Continued on next page)



First-place winner of the Beaver-Advance distributor sales contest, awarded at Condex, was Robert Krutachvil, Riverside Sales Contractors Equipment, Inc., Brookfield, Ill. Sharing his enthusiasm for the prize clock are daughter Maryanne, 17, and Bob, Jr., 19.

MARCH, 1959



new rubber *Aquastop*® provides permanent watertightness under hydrostatic pressure

New rubber AQUASTOP has been engineered in material and design to withstand the contraction, expansion and shearing movements of concrete construction*—and continue to provide absolute water control under hydrostatic pressure.

AQUASTOP's high tensile strength resists distortion during installation; and its flexibility and elasticity virtually eliminate the fatigue problems so often encountered in less-efficient materials.

Manufactured in various grades of natural rubber, standard G.R.S. rubber and Neoprene, AQUASTOP is available in standard sizes in flat and split dumbbells, centerbulb and split centerbulb types—with a full choice of molded ells, crosses, tees, unions and other accessories.

If the quality of your next installation depends in part on the quality of the waterstop used in the joints, depend on Presstite Rubber AQUASTOP.

*E.g., AQUASTOP 9" Centerbulb Type will withstand 5" deformation created by lateral contraction or shearing action.

WRITE Dept C-8 for illustrated literature



A DIVISION OF AMERICAN-MARIETTA COMPANY • 3744 CHOUTEAU AVE. • ST. LOUIS 10, MO.

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Martha Rountree, TV headliner, moderates the Industry Press Conference session. Group of newsmen at left quiz construction and highway men, right. The latter are: Robert M. Hoover, president, Kansas City Bridge Co.; G. A. Gilbertson, president, The Frank G. Hough Co.; Herbert R. Silverman, president, James Talcott, Inc.; and Bertram D. Tallamy, Federal Highway Administrator.



Delegates at the Early Birds breakfast opened their eyes when Georgia Wade went into her act.

(Continued from preceding page)

Co., Inc., Atlanta, Ga., treasurer; and P. D. Hermann, executive secretary.

Anderson speaks out

In his address at the opening business session, 1958 president H. D. Anderson leveled some hard-hitting remarks at both distributors and manufacturers. He complained that profits were on the wane because dealers were determined to do each other out of business. He suggested that dealers resist the pressure to cut prices, and recommended that they improve the management of their companies in order to reduce the cost of doing business. He pointed



Muller P. Moody of M. D. Moody & Sons, Inc.

to some cases where manufacturers were actually competing with distributors by establishing their own company-controlled sales outlets.

According to Anderson, 1958 was a poor year for profits for the distributor, but the stage is set for a more profitable year ahead. There is a better balance in the distributor's

inventory. Collections are better. Building and road construction are on the upswing. "According to best estimates," Anderson said, "contracts to be awarded in 1959, both business and private, should exceed 1958's and, in all probability, be the highest in the history of our country."

Shrinking value of dollar

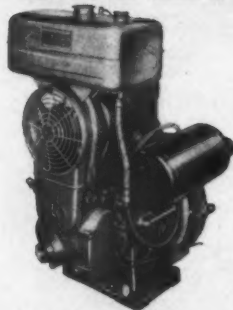
According to two of the speakers, distributors had a greater responsibility than merely running their own businesses. In order to keep American economy on an even keel, the businessmen were urged to take a more active part in influencing governmental decisions.

E. G. Swigert, president, The Ry-

NEED DEPENDABLE AIR-COOLED DIESEL POWER?



JLO Series 365
7 Horsepower



JLO Series 660
12 Horsepower

JLO* ENGINES

(Pronounced "ee-lo")

Give You

SIMPLICITY: 2-cycle design, practical in this horsepower range, eliminates valving for maintenance-free operation.

ECONOMY: low initial cost is combined with maintenance economy and reduced overhaul cost, when required.

DEPENDABILITY: JLO Series engines have proved their fast-starting, rugged design in applications the world over.

7 TO 12 HORSEPOWER: high power rating in a small package to match your requirements for a light-weight power source.



AVAILABLE IN THE U.S. EXCLUSIVELY THROUGH

HERCULES

GET FREE BOOKLET!

Hercules Motors Corp., Dept. 14C, Canton 2, Ohio

Please send me bulletin on JLO Series engines and the name of my Hercules distributor.

Name _____

Address _____

City _____

*Reg. TM of Jlo-Werke, G.m.b.H., Pinneberg, Germany

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Pulsating Magnet

Vibratory

VIBRATORS AND FEEDERS



keep materials flowing freely, increase production and reduce material handling cost

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SYNTRON Vibrators and Feeders offer compact, rugged construction and simplicity of design. Their electromagnetic principle eliminates mechanical wearing parts, assures dependability of operation, increases service life with very low maintenance.

Control of amplitude or power of both SYNTRON Vibrators and Feeders is instantaneous and may be manual or automatic. They are easily integrated into continuous operations.

SYNTRON can help you with many of your materials handling problems.

Write for complete catalog data—FREE

SYNTRON COMPANY

227 Lexington Ave.

Homer City, Pa.

Other SYNTRON Equipment of proven dependable Quality



CONCRETE MASS VIBRATORS



VIBRATING CONCRETE FLOATS



CONCRETE FORM VIBRATORS

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CONTRACTORS AND ENGINEERS

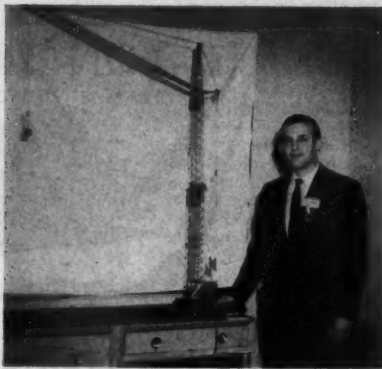


Fisher Mfg. Co., Mt. Pleasant, Mich., displayed a cut-away Loadmor trailer at the Condex exhibit.



Wire Rope Corp. executives watch Richard Schuster, 11, son of a Detroit dealer, meet Wireco's "Mr. Brown."

Vice president Ben Carbeau demonstrates the 1/40 scale model of Universal-Leibherr's traveling tower crane in his company's hotel suite.



ster Co., Portland, Ore., warned that the economic boom era we appeared to be entering offered a dangerous prosperity; that it was based on the unstable ground of inflation and could topple at any time. He urged dealers to learn more about the economics of our country and to take an active part in influencing government policies. He suggested that the AED, as an organization, work toward better government rather than only for the interests of member companies.

Tax expert T. Coleman Andrews also warned of the dangers of inflation. "Our No. 1 enemy is inflation," he said. "This has been very aptly called The Cruellest Tax. It has been spawned by spending for votes and

Robert P. McKenrick, CIMA executive vice president.



political power rather than for the true necessities of government." The former U. S. Commissioner of Internal Revenue strongly recommends that the government balance its budget at a greatly reduced level of spending. (He urges support of Presi-

(Continued on next page)



Ideal Tie Wire Reels save time . . . wire . . . money!

Makes Wire Tying Faster, Safer!
Contractors everywhere prefer Ideal Tie Wire Reels to any other wire tying method they've ever used . . . and so do the workers who use them! Ideal Reels permit 8 to 10 more ties per man per minute, often much more . . . saves up to 33% in wire, ends wire waste . . . protects users from injury, re-

duces labor fatigue! Wire capacity . . . 3½ to 4 pounds . . . twice as much as horse and buggy methods you have used. Handles 14 through 20 gauge wire. Call your local supplier and get a free demonstration of the biggest advance in wire tying known today . . . or write us for full details.

More Economy . . . Plus
More Production, Too!



Write Reel Company
1424 Madison Street
Paducah, Kentucky
Please send me facts on Ideal Tie Wire Reels, and address of nearest dealer.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

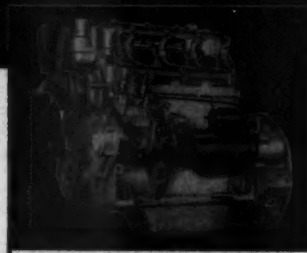
IDEAL REEL COMPANY, PADUCAH, KENTUCKY

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MARCH, 1959



**START
at the top
AND WORK
DOWN**



Waukesha Model 180-DLC Diesel—144 cubic inch., four-cylinder, 3½-in. bore x 3¾-in. stroke, counterbalanced crankshaft.

WAUKESHA Diesel powers this PAYLOADER®

When demolishing a multi-story, block long storage warehouse in New York City, the Cleveland Wrecking Company's *Payloaders* were taken to the top floor. From there they bulldozed, loaded and dumped all kinds of brick and rubble through floor hatchways down into the basement for later removal.

Pictured on the job is front-wheel drive, rear-wheel steer Model HA *Payloader* powered with a Model 180-DLC Waukesha Diesel—an engine with the lively acceleration and quick pick-up that gives tractor-shovel speed, flexibility, and all-around versatility, particularly in shorter turning. Model HA *Payloader* lifts 3000 lb. and carries 2000 lb. Its powerful 40-degree bucket tip-back has 3100 lb. of breakout force for prying out loads of heavy and lumpy materials. Its 180-DLC Waukesha Diesel is shown here; but it is also available with a Waukesha Model FC Gasoline Engine. Get Engine Bulletins 1626 and 846.

408

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories—Waukesha, Wisconsin, and Clinton, Iowa

For more facts, use Request Card at page 18 and circle No. 332

A new peak in global highway expenditures was reached in 1958, as nations in the free world spent \$17.13 billion on roadbuilding, maintenance, and administration. The roadbuilding total was 14.5 per cent higher than 1957.

BIG 16-TON TILT TRAILER

Automatic "Easy Up-Easy Down" hydraulic tilt deck only 33" high. Deck gently tilts to low load angle. Walking beam pivots on Timkin Bearings. No skids or blocks needed. Just the rig for D-4, D-5, TD-9, OD-12, pavers, and other loads. Exclusive breakdown-proof rear deck channel mounting.



Professionally Engineered
— ONE-MAN OPERATION —
Chosen by Comparison

Model 1400 — 14 or 16 ton
Only \$2125. W/tires & Deck.

Extra strong frame. Wiring enclosed. Other models 3 ton and up.

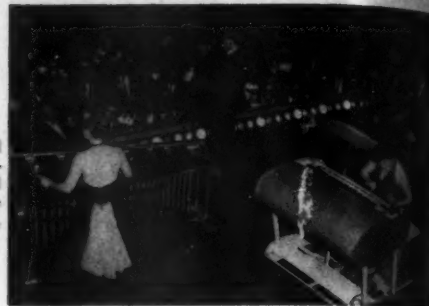
WRITE for catalog, price, and name of nearest distributor.

WISCONSIN TRAILER CO.

1949 N. 121st St.
Milwaukee 13, Wis.

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Conventions aren't all work. In back of the footlights are the Musical Wades, two husband-wife teams who played, danced, and sang for delegates.



(Continued from preceding page)

dent Eisenhower's balanced-budget program.

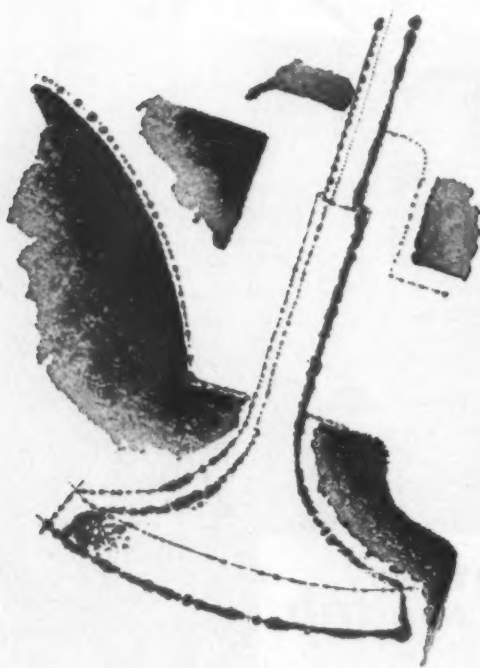
Andrews has no great love for the present income-tax rates, which he

believes destroy the incentive for young men to start their own businesses. According to him, the income tax nearly eliminates the profits of industry; without profits, industries cannot expand; they cannot support, as they have in the past, the building of hospitals, universities, and other worthy institutions.

In his speech, Andrews spoke out against raising the federal gasoline tax to get money for the construction of the Interstate System. "It is my understanding that about 40 per cent of the proceeds from this tax at the present rate is being diverted to other purposes than construction of roads . . . If more money is needed for roads than is now being made available for them from the gasoline tax, the diversion should be stopped and the whole of the proceeds under the present rate be used for road purposes."

More effective advertising

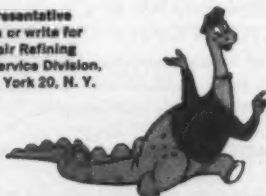
The chairman of AED's Advertising Committee, M. S. Greene, Construction Equipment, Ltd., Montreal, Canada, reported that only about 25 per cent of member companies have an effective advertising program. Speaking at the final business session, he pointed out that distributors will



Valves... Oil... and How to Save Money

Valves which open and close hundreds of times a minute can cause lost money, time and power when deposits and wear start to take their toll. Sinclair Tenol® Oils fight deposits and wear—help keep vital parts working longer without repair. Refill with Tenol now. Next time management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

Call your Sinclair Representative for further information or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.



SINCLAIR

Tenol® Oils

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NOW! A HEAVY-DUTY INDUSTRIAL DIGGER

that is TRACTOR MOUNTED



DESIGNED FOR
RUGGED
DIGGING

- Telephone Poles
- Footings
- Heavy Posts

- Digs Faster... Deeper... (Up to 6 Ft. Through Any Kind of Soil)
- Fits Most Large Farm and Industrial Tractors
- One Man Operated
- Amazing Low Cost

FAMOUS PREWITT DIGGERS



WRITE FOR FREE LITERATURE
Phone 40

J.R. PREWITT AND SONS
SINCE 1900

Dept. EC
Pleasant Hill, Missouri

For more facts, circle No. 335

CONTRACTORS AND ENGINEERS



Dewey Brothers, Inc., a Philadelphia insurance firm, insured a good play at its Condex booth by having shapely Holly Ray on hand to greet the delegates.

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor

WINSLOW SCALE COMPANY

P.O. Box 1198
Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 336

show a greater profit in their businesses if they make a greater use of advertising. Advertising, he says, cuts down on the number of calls a salesman has to make before he gets an order. Well placed advertising makes contact with the customer, arouses his interest, and creates a preference for the product. With all this done for him, the salesman steps in, makes his pitch, and closes the order. The cost of the advertising is more than paid for by the saving in the cost of selling, and the increased volume of sales.

Industry press conference

At a give-and-take press conference, moderated by Martha Rountree,



Bryant Ingram,
Acme Iron Works,
San Antonio,
Texas.

editors and publishers shot questions at a panel of industry and government leaders.

In spite of criticism directed at the progress of the national highway program, Bertram D. Tallamy, Federal Highway Administrator, assured his audience that all was well. The program is proceeding somewhat ahead of the original schedule set forth in 1966, he said. Because of increased right-of-way and construction costs, money in the trust fund is getting low. Tallamy was confident, however, that Congress would find the means of raising the money in time to avert

a slowdown in construction.

G. A. Gilbertson, president of the Construction Industries Manufac-
(Continued on next page)



Geared by FULLER . . .

Rhodes & Jamieson keeps construction materials on the go

Rhodes & Jamieson, Oakland, California, produces about 5,600 cubic yards of wet mix construction material every day. To keep this "perishable" material moving on schedule, the company runs each bottom dump truck in its large fleet on two 9-hour shifts, and gives each a preventive maintenance check every week.

Tough schedules and tougher hauling conditions call for the best in equipment. That's why Rhodes & Jamieson officials are so pleased with

the performance and reliability of the Fuller Transmissions in their big fleet. Typical of the equipment used by the company are the following trucks:

80 International RF-192 ready-mix trucks with 5 and 7-yard mixers, equipped with Fuller 5-C-65, 5-speed Transmissions.

22 International D-405 double bottom hopper dump trucks, with Fuller R-96 10-speed ROADRANGER® single-stick Transmissions.

3 International RD-450 6x6 C.O.E.

units with 7-yard mixers, equipped with Fuller R-46 semi-automatic ROADRANGER Transmissions, featuring 8 closely-spaced forward speeds, shifted by a single lever.

For dependability, ease of operation and economy, Rhodes & Jamieson specifies Fuller Transmissions. There is a Fuller for your job. Ask your truck or equipment dealer for more information on the Fuller Transmission best suited to meet your specific operating requirements.

FULLER

TRANSMISSION DIVISION
MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company



Unit Drop Forge Div., Milwaukee 1, Wis. • Shaper Asso. Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 4, Cal. and Southwest Dist. Office, Tulsa 3, Okla. Automotive Products Company, Ltd., Brock House, Langham Street, London W.1, England, European Representative

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Like getting out of a taxi, good-looking Mrs. John Korf steps out of an Industrial Cab Co. unit at the Condex display.

MARCH, 1969

(Continued from preceding page)

turers Association, was concerned about the dangers of inflation. He believed it could be stemmed by a co-operative effort of contractors, distributors, and manufacturers. They must do a better job of running their own businesses. They must work hard to cut expenses and to devise more efficient methods of doing their jobs.

Robert M. Hoover, president, Kansas City Bridge Co., Kansas City, Mo., said that contractors were having trouble in financing high-priced equipment. Faced with much lower profits than in the past, contractors were unable to afford the high rates of interest on equipment loans. He hoped that either manufacturers or loan companies would be able to pro-

vide some relief for this situation.

Future Meetings

Herb Daniels, account supervisor, Tatham-Laird, Inc., Chicago, gave a stimulating and well received talk on "Ideas for the Asking." Using such props as a cake of ice, a pretty girl, a pair of scissors, and a pitcher of water, Daniels demonstrated the birth of an idea and the changes that may take place from the original form to its final use.

The 1960 AED meeting will be held in Chicago, January 24 through 28. In 1961, however, the meeting place will shift to Los Angeles for the 42nd convention, to be held February 5 through 9.

THE END

A SECTION OF STEEL catwalk is hoisted into position by a Yale fork-lift in the Hass powerhouse tailrace tunnel of the Kings River project in California. Connections are made with galvanized 1/2-inch-diameter Bethlehem Pacific machine bolts. The 2,000-foot-long catwalk above water level in the tunnel will serve as an emergency exit.



For the finest
and fastest
financing...

CALL
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of
JAMES TALCOTT, Inc.
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ORegon 7-3000

If you want action on your income-producing equipment paper, call the Credit-America Division of James Talcott, Inc. You'll be talking directly to a person who can give you the answers without delay... often the very same day.

Credit-America's experienced staff concentrates on construction and industrial equipment financing. Because of constant contact with this field, the man you talk to has the knowledge and judgment... and the authority... to act fast.

Other Talcott Special Financing...

- Accounts Receivable (Non-Notification)
- Inventories
- Machinery & Equipment
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For more facts, circle No. 338

Raymond announces contest for paper on foundations

Raymond Concrete Pile Co., division of Raymond International Inc., has announced the second annual Alfred A. Raymond Award of \$1,000 for the best paper on the engineering of structural foundations. Deadline for manuscripts is September 1, 1959.

Papers may deal with any phase of foundation engineering, soil investigation, theoretical or applied soil mechanics, and design or construction techniques. The contest is open to engineering undergraduates, graduate students, and faculty; design and practicing engineers; and those engaged in foundation engineering and construction. Graduate and undergraduate theses on foundation engineering are eligible.

Those interested in submitting papers should register and receive complete instructions by writing to: Alfred A. Raymond Award, Room 1214, 140 Cedar St., New York 6, N. Y.

Seaman-Andwall appoints

William C. Cornell has been named general sales manager of Seaman-Andwall Corp., Milwaukee, Wis., a subsidiary of American Marietta Co. Cornell will direct sales of the company's road-construction machinery.

AGC issues record book for blasting operations

"Blasting Log," published by The Associated General Contractors of America, provides contractors with a permanent record of each blasting operation. It combines all material on blasting operations in one handy form.

The log maintains a permanent record of the type of formation blasted, depth of holes used for the charges, type and quantity of explosives, number and type of delays used, weather conditions under which shots were made, geographic location, and time.

Copies of the log can be obtained by writing to the AGC, 1957 E St. N. W., Washington 6, D. C. Prices are: 20 cents per copy; \$2.25 per dozen copies; and \$15 per hundred copies.

WACHS Portable POWER AND MANUAL PIPE CUTTERS 2" TO 72" CAPACITY



WACHS GUILLOTINE SAW
2" to 8" Capacity
Electric or Air Drive



"BIG" GUILLOTINE SAW
10" to 16" Capacity



WACHS NATIONAL SAW
"The milling machine on wheels"
Cuts 10" to 72" Pipe



WACHS STRICKLER
RATCHET CUTTER
"Lathes Type Cuts"
3 sizes—2 1/2" to 24" Capacity

Write for descriptive bulletins

THE E. H. WACHS COMPANY
1525 NORTH DAYTON STREET • CHICAGO 22, ILLINOIS

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ROCKLAND—THE MOST VERSATILE LAND- CLEARING ATTACHMENTS IN THE WORLD.



Easily converts from Tree-Brush-Root
Cutter to Standard Rake Front

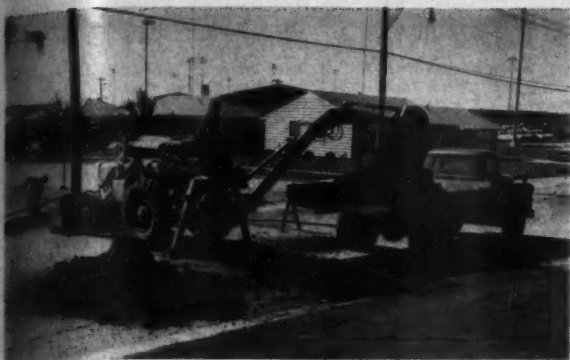
- ROCK RAKES
- GENERAL PURPOSE RAKES
- BRUSH RAKES
- TREE KNOCK-DOWN BOOMS
- TREE SAWS
- BACK-RIPPER TEETH
- STUMPMASTER BLOCKS
- STUMP PULLERS
- TOOL BARS
- UNDERCUTTERS
- ROOT CUTTER TEETH
- HI-BALLS AND CHAIN

Rockland Products may be purchased from most Allis Chalmers, Elmco, International Harvester and Oliver Crawler Tractor Dealers. For additional information, contact direct.

ROCKLAND ALLIED EQUIPMENT CO.
3778 West Colonial Drive • Orlando, Florida

For more facts, circle No. 340

CONTRACTORS AND ENGINEERS



A 6-FOOT-DEEP STORM-SEWER CATCH BASIN in Rochester, Minn.—part of the 48 to 12-inch storm-sewer installation for the city—is excavated by an OHAWA Model LX backhoe on an Oliver 880 tractor. Excess material is loaded to the truck in a continuous swing. The work is being done by C. G. Fraser, St. Paul, Minn.

Concrete and aggregates discussed in HRB bulletin

"Air-Voids in Concrete and Characteristics of Aggregates," Bulletin 196 from the Highway Research Board, contains three papers, the first of which discusses the relationship of physical properties of some Iowa carbonate aggregates to durability of concrete. The second paper deals with the correlation between concrete durability and air-void characteristics. The third discusses chemical characteristics of some carbonate aggregate as related to durability of concrete.

Priced at \$1, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Nevada highway news

After 39 years with the Nevada State Highway Department, assistant state highway engineer William T. Hilecomb has resigned to become director of the highway construction division of Wells Cargo, Inc., contractors of Las Vegas and Reno, Nev.



Model H-8 and H-10 (above). Gasoline powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power take-off for attaching "BERG" flexible shaft surfacing equipment. Model A (right) is lightweight, electric powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces. Wire or write for details.

"BERG" CONCRETE SURFACERS

for: bridges, highways, airport runways, dams, culvert, floors, walls.

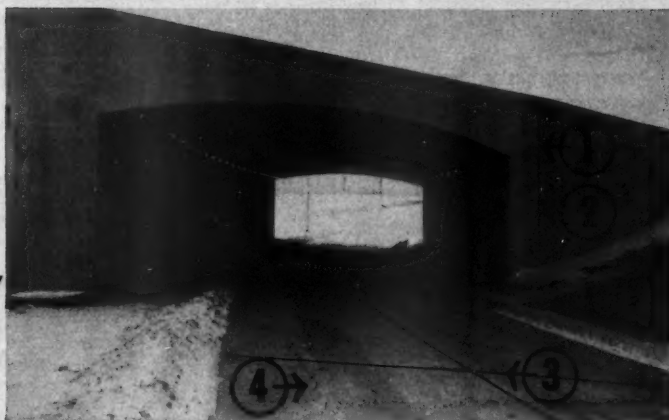


CONCRETE SURFACING MACHINERY CO.
4665 Spring Grove Avenue Cincinnati 32, Ohio
For more facts, use Request Card at page 18 and circle No. 342

SERVICISED PRODUCTS...



on the ILLINOIS TOLLWAY



1 → SELF EXPANDING CORK...



the specially treated premolded joint filler capable of expanding as much as 50% beyond original thickness, was used to keep joints filled at all times, preventing entry of foreign material or driven rain water into joint spaces.

CENTERBULB DUMBELL WATERSTOP

2 → SERVICISED RUBBER WATERSTOP...

in both Flat and Centerbulb Dumbbell designs was used in construction and expansion joints in bridge structures, retaining walls and abutments to insure water-tight joints.



SELF-EXPANDING CORK

3 → HOT POURED PARA-PLASTIC®...

Pavement joints sealed with Para-Plastic remain sealed under wide temperature variations and high speed traffic... insure maintenance-free highway use. Para-Plastic is a rubberized asphalt compound that forms a resilient, adhesive and effective plastic seal.

4 → WHITE PIGMENTED CURING COMPOUND...

Servicised membrane-forming White Pigmented Curing Compound, applied on freshly finished concrete pavement surfaces insured proper curing and produced high strength pavement.

Write for the Serviced Products Catalog

SERVICISED PRODUCTS CORPORATION
6051 WEST 65th STREET • CHICAGO 38, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 343

FOUNDATION CONSTRUCTION

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DRILLED AND UNDERREAMED PIERS

SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga., Pittsburgh, Pa., Washington, D.C., Cleveland, Ohio

Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

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MARCH, 1959

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Soils engineering—a booklet on the purpose and scope of soils engineering. Contains step-by-step description of a typical subsurface exploration project including drilling, sampling, and testing. Tells how the data obtained is helpful in bidding and job planning. Illustrated with charts, graphs, on-the-job photos.

Write to Mobile Drilling, Inc., Dept. C&E, 1244 N. Cornell St., Indianapolis 4, Ind., or use the Request Card at page 18. Circle No. 10.

Electric hoists—a bulletin describing the complete line of CM Lodestar electric hoists, including the three new larger-capacity and higher-speed models recently introduced. According to the literature, these hoists are now available in capacities from 1/2 ton to 2 tons with a wider range in lifting speeds. Bulletin 158-G.

Write to the Chisholm-Moore Hoist Division, Columbus McKinnon Chain Corp., Dept. C&E, 6067 Fremont Ave., Tonawanda, N. Y., or use the Request Card at page 18. Circle No. 9.

Electronic data processor—a brochure describing Univac data-processing equipment. Illustrates 15 functions and the basic equipment that performs them. Written in layman's language. Bulletin U-1363.

Write to Remington Rand, division of Sperry Rand Corp., Dept. C&E, 315 Fourth Ave., New York 10, N. Y., or use the Request Card at page 18. Circle No. 7.

Wheel aligning, balancing—a revised catalog listing the complete line of John Bean Division wheel-aligning and wheel-balancing accessories and supplies. Catalog L-1618.

Write to the John Bean Division, Food Machinery & Chemical Corp., Dept. C&E, P. O. Box 840, Lansing 4, Mich., or use the Request Card at page 18. Circle No. 86.

Dustless concrete drilling—a handy folder providing specifications

Pipeline backfiller—a folder describing the Cleveland Model 190 pipeline backfiller. Special emphasis on the new throw-out clutch that is cooled by continuous circulation of water from the engine's cooling system. Illustrated with action photographs. Specifications included.

Write to The Cleveland Trencher Co., Dept. C&E, 20100 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 78.

Motor graders; rollers—a folder on the complete Huber-Warco line of motor graders and road rollers. Outlines the features of the nine motor grader models ranging from 75 to 195 horsepower; tandem and 3-wheel rollers; and the versatile M-52 Maintainer that performs nine maintenance jobs. Booklet HWG-561.

Write to the Huber-Warco Co., Dept. C&E, Box 501, Marion, Ohio, or use the Request Card at page 18. Circle No. 104.

Wheel-type trencher—a bulletin detailing the major features of the Parsons Model 130 wheel-type Trenchliner. Also includes photographs and brief explanations of four other wheel-type units. Bulletin KP-609.

Write to the Parsons Co., division of Koehring Co., Dept. C&E, P. O. Box 431, Newton, Iowa, or use the Request Card at page 18. Circle No. 63.

Special-purpose electrodes—a catalog and procedure guide for Lincoln manual arc-welding electrodes for hard-surfacing and for welding stainless steels, nonferrous metals, and cast iron. Describes each electrode, its properties and applications, and how to use it. Charts aid selection and identification, and give welding machine settings for each electrode.

Write to The Lincoln Electric Co., Dept. C&E, 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 101.

Calcium chloride—a manual entitled "Calcium Chloride for Abrasive Treatment in Winter Maintenance." Includes general data on calcium chloride; recommended procedures for treating, storing, applying, and spreading abrasives. Also contains charts on distances required to stop on icy pavements.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 45.

Floating construction units—a brochure on Storey Uniflotes, versatile floating construction units. Data on Interflote and tidal connectors, fender posts, and pile guides, as well as on propulsion units. Illustrated with photographs and a table of plan dimensions.

Write to Contractors Service, Ltd., Dept. C&E, 36 Commercial Road, Leaside (Toronto), Ontario, Canada, or use the Request Card at page 18. Circle No. 80.

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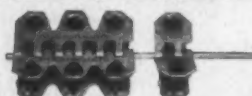
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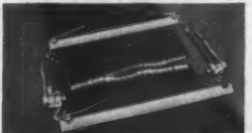
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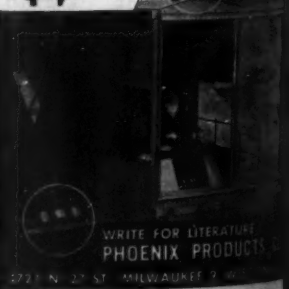


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PHOENIX PRODUCTS

For more facts, circle No. 346
CONTRACTORS AND ENGINEERS

and operation details on the new Thor No. 15 DL dustless concrete and rock-drilling hammer and companion dust extractor. According to the literature, the unit drills holes from 13/16 inch to 1 1/2 inches.

Write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 81.

Power-transmission equipment—a bulletin describing the complete line of American Pulley power-transmission equipment. Describes the major features of the firm's speed-reduction drives; screw-conveyor drives; adjustable-speed drives, both standard and wide range; motor bases; and conveyor and split pulleys. Lists the complete range of sizes for each unit.

Write to The American Pulley Co., Dept. C&E, 4200 Wissahickon Ave., Philadelphia 29, Pa., or use the Request Card at page 18. Circle No. 49.

Rear-dumper—literature on the Euclid Model R-27 rear-dump hauler. Well illustrated with cutaway views of all major components and on-the-job photographs. Complete specifications. Form 130.

Write to the Euclid Division, General Motors Corp., Dept. C&E, 1361 Chardon Road, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 100.

Wheel-mounted backhoe-loader—a bulletin describing the Case utility Model 310B 42-hp wheel-mounted backhoe-loader. Presents 35 operating benefits, plus pertinent mechanical details. Action views of the rig working under various conditions. Bulletin CUS-110.

Write to the J. I. Case Co., Dept. C&E, 700 State St., Racine, Wis., or use the Request Card at page 18. Circle No. 105.

Straddle carrier—a brochure giving full specifications and construction features of the Clark-Ross Series 85 straddle carrier. Operating characteristics such as travel speed, gradability, and turning radius depicted in charts and graphs. Power train, optional torque converter, brakes, hoist mechanism, and other major components also fully described.

Write to the Clark Equipment Co., Ross Carrier Division, Dept. C&E, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 32.

Tractor-loader—a pamphlet on the Ford Series 1801 industrial tractor and Series 712 heavy-duty loader. Stresses the design features of the unit's hydraulic system. Complete specifications; drawings and photographs.

Write to the Tractor & Implement Division, Ford Motor Co., Dept. C&E, 2500 E. Maple Road, Birmingham, Mich., or use the Request Card at page 18. Circle No. 79.

Ice control—literature on the Highway Equipment Co.'s Hi-Way Model CP skid-mounted ice-control spreader. According to the pamphlet, the unit can be loaded onto any dump truck with a crane or hoist in minutes.

Write to the Highway Equipment Co., Dept. H20-1, Dept. C&E, 616 D Ave., N. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 5.

Wire-rope maintenance—an illustrated bulletin on the maintenance of wire rope. Tells when inspections should start; explains how often they should be made and how they should be reported; gives a point-by-point check list of what should be done each time an inspection is made.

Write to the Leschen Wire Rope Division, H. K. Porter Co., Inc., Dept. C&E, 2727 Hamilton Ave., St. Louis 12, Mo., or use the Request Card at page 18. Circle No. 58.

Marine-mounted cranes—a folder describing Manitowoc marine-mounted cranes and excavators for dredging, canal excavation, shoreline material handling, and marine construction. On-the-job photographs illustrate the text.

Write to the Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manitowoc, Wis., or use the Request Card at page 18. Circle No. 82.

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.

Concrete inserts—a folder on PD concrete inserts for precast and prestressed-concrete products and structures. According to the literature, these inserts, cast of zinc alloy with full standard internal threads, are made for use with 7 different bolt sizes ranging from 1/4 to 3/4-inch diameters. Illustrations, etc.

Write to Star Precision Devices, Dept. C&E, Mountainville, N. Y., or use the Request Card at page 18. Circle No. 13.

(Continued on next page)



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Project: Sarvis Junior High School, Wichita Falls, Texas. Architects: Jesse G. Dixon, Arch., R. B. Pardus, Asso., Wichita Falls, Texas. General Contractor: W. C. Shelton, Lawton, Okla. Masonry Contractor: W. P. Howle, Wichita Falls, Texas. Dealer: Stephens Lumber Co., Wichita Falls, Texas.

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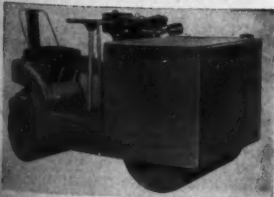
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MARCH, 1959

Product Literature

Cableways—a brochure describing eight Sauerman torque-converter-equipped slack-line cableway installations. Includes data on typical operating costs and a drawing of a representative installation. Photographs. Brochure TC-1.

Write to Sauerman Bros., Inc., Dept. C-34, Dept. C&E, 620 S. 28th Ave., Bellwood, Ill., or use the Request Card at page 18. Circle No. 64.

Machinery motion indicator—a folder describing the Bin-Dicator Roto-Guard motion indicator, a device said to provide positive indication of drop in speed or stopping of machinery such as conveyors, elevators, feeders, and belt conveyors. Data on installation and checking. Photographs; dimensional drawings.

Write to The Bin-Dicator Co., Dept. C&E, 13946 Kercheval Ave., Detroit 15, Mich., or use the Request Card at page 18. Circle No. 108.

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.

Steel strapping—literature on the benefits of hanging beam bottoms with steel strapping in the construction of steel-reinforced concrete buildings. Includes charts and diagrams explaining how to calculate size and spacing of steel strapping for handling beam framework. Also contains photographs of several installations, and of the steel strapping equipment used. Bulletin U7-4.

Write to the Acme Steel Co., Dept. C&E, 135th St. and Perry Ave., Chicago 27, Ill., or use the Request Card at page 18. Circle No. 31.

Utility pumps—a catalog covering Continental utility pumps in a range of capacities to 50 gpm, and covering a wide variety of applications. Emphasizes the units' "one moving part" design. Illustrations, specifications included. Form No. CP-3489.

Write to the Continental Pump Co., Dept. C&E, 1027 S. Vandeventer Ave., St. Louis 10, Mo., or use the Request Card at page 18. Circle No. 23.

Wire-rope cutters—a fact sheet on three models of Hammerblow wire-rope cutters for light, heavy, and extra-heavy-duty application. Lists such features as portability; fast, clean cuts; safe operation; and quick, easy blade changing.

Write to the Hammerblow Wire Rope Cutter Co., Dept. C&E, 1 Profit Ave., Springfield, N. J., or use the Request Card at page 18. Circle No. 41.

Asphalt-plant burner—a bulletin describing the Standard Model S-M low-pressure, air-atomizing burner for operation with the exhaust system on the firm's Superlift asphalt-plant dryers.

Write to the Standard Steel Corp., Dept. C&E, 5087 S. Boyle Ave., Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 106.

Blacktop equipment—a catalog describing and illustrating the complete Littleford line of blacktop equipment. Includes asphalt plants, bituminous distributors, brooms, asphalt pavers, kettles, rollers, etc.

Write to Littleford Bros., Inc., Dept. C&E, 485 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card at page 18. Circle No. 59.

Gasoline engine—an illustrated bulletin describing the Hercules Model IKB 4-cylinder L-head gasoline engine developing 46.5 horsepower at 3,200 rpm. Includes basic installation diagram, power chart, and detailed specifications. Bulletin No. E-128.

Write to the Hercules Motors Corp., Dept. C&E, 101 11th St. S. E. Canton 2, Ohio, or use the Request Card at page 18. Circle No. 3.

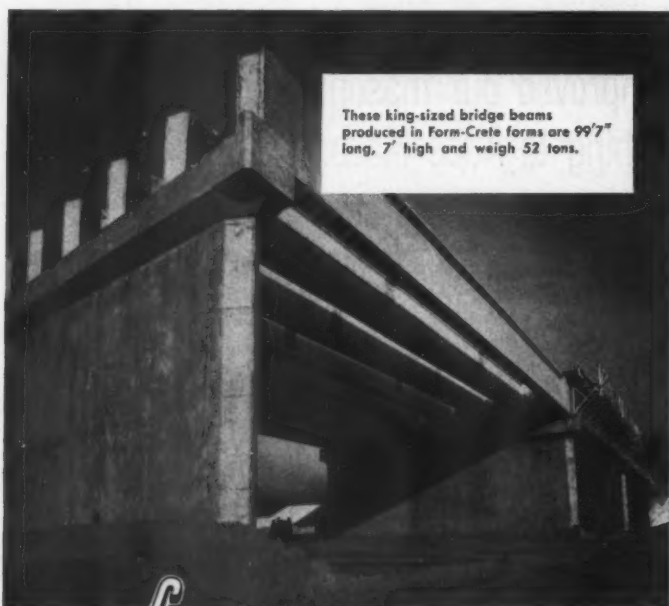
Concrete adhesives—a technical bulletin detailing the results of laboratory and field tests with Thiokol liquid polymer/epoxy resin concrete adhesives. Data on physical tests including tensile, flexural, and shear strength, in addition to the effects of freeze-thaw cycling and water immersion. Methods of application also described.

Write to the Thiokol Chemical Corp., Dept. C&E, 780 N. Clinton Ave., Trenton 7, N. J., or use the Request Card at page 18. Circle No. 93.

Installing structural steel bolts—a chart showing the proper procedure for installing high-strength structural steel bolts. Explains identification of bolts, as well as the advantages of bolting structural steel members. Form No. 3547.

Write to the Republic Steel Corp., Dept. C&E, 1441 Republic Bldg., Cleveland 1, Ohio, or use the Request Card at page 18. Circle No. 8.

Medium-duty truck-mounted crane—descriptive literature on the Hydropower Runabout crane, a self-loading and unloading unit designed for truck mounting. Describes such features as fully hydraulic lift and swing, and dual controls that permit



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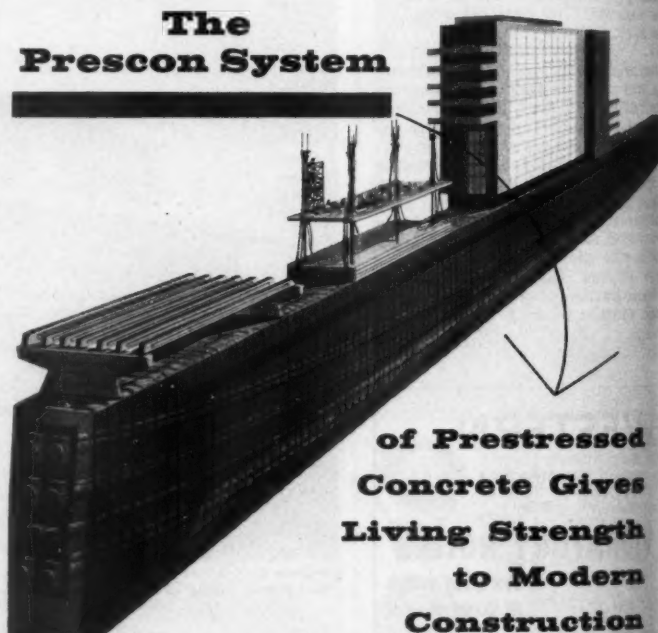
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CONTRACTORS AND ENGINEERS

operation from either side of the truck. Photos and a dimensional drawing.

Write to the Anderson Engineering Co., Dept. C&E, 231 Bent St., Cambridge 41, Mass., or use the Request Card at page 18. Circle No. 92.

Rotary pumps—a bulletin describing Deming general-purpose, internal-gear rotary pumps. Offers a complete list of applications, as well as data on capacities, rpm tables, and construction materials. Bulletin No. 1635.

Write to The Deming Co., Dept. C&E, Salem, Ohio, or use the Request Card at page 18. Circle No. 35.

Masonry anchors—a brochure on Slabin heavy-duty masonry anchors. Step-by-step photographs and cross-section drawings of installations of both plain and threaded types; full specifications. Also includes technical data on tensile, shear, and compression strengths in good-quality masonry materials.

Write to the Star Expansion Industries Corp., Dept. C&E, Mountaintown, N. Y., or use the Request Card at page 18. Circle No. 56.

Steel-panel scaffold shoring—a handbook on the use of steel-panel scaffolding for shoring in reinforced-concrete-type construction. Includes section on applications such as slabs with beams or dropheads; engineering data; and case histories including actual shoring layouts.

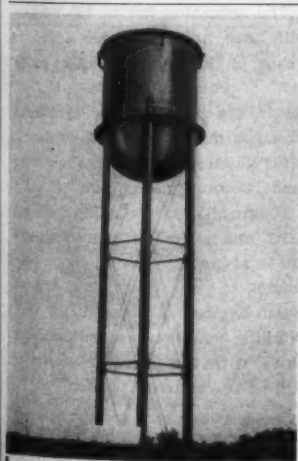
Write to the Universal Mfg. Corp., Dept. C&E, 133 North St., Zellenople, Pa., or use the Request Card at page 18. Circle No. 14.

Concrete pipe—a brochure describing the benefits of Lock Joint roller suspension concrete pipe for sewers, culverts, sewer force mains, and low-head water transmission lines. Text illustrated.

Write to the Lock Joint Pipe Co., Dept. C&E, P. O. Box 269, East Orange, N. J., or use the Request Card at page 18. Circle No. 43.

Hose couplings—a condensed catalog on the wide variety of Le-Hi hose couplings and fittings for every type of industrial rubber hose. Illustrated with photographs. Catalog No. 14.

Write to the Hose Accessories Co., Dept. C&E, 2704 N. 17th St., Philadelphia 32, Pa., or use the Request Card at page 18. Circle No. 66.



Water Tank Construction Repair and Painting

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Hydraulic hoists—literature on the design and operating characteristics of the 1,500-pound-capacity Tusky hydraulic hoist. Also describes the Simba hoist, a 1,000-pound-capacity unit.

Write to the Tubular Structures Corp. of America, Dept. C&E, 2960 Marsh St., Los Angeles 39, Calif., or use the Request Card at page 18. Circle No. 28.

Underground ventilation—a booklet describing various types of ABC flexible ventilation tubing for underground work. Data on lengths and sizes, couplings, suspension, and accessories. Also gives information on brattice cloth and powder bags. Photos and drawings.

Write to the American Brattice Cloth Corp., Dept. C&E, 280 S. Buffalo, Warsaw, Ind., or use the Request Card that is bound in at page 18. Circle No. 74.

All-purpose service body—an illustrated bulletin detailing the McCabe-Powers Service-Master all-purpose service body for 1/4, 1/2, 1, and 1 1/2-ton chassis. Text illustrated with photographs and dimensional drawings.

Write to the McCabe-Powers Auto Body Co., Dept. C&E, 5900 N. Broadway, St. Louis 15, Mo., or use the Request Card at page 18. Circle No. 65.

Self-propelled trenchers—literature detailing the construction and operating characteristics of Models M-2 and C-2 self-propelled trenchers. Contains on-the-job photographs and includes specifications for both machines.

Write to The Charles Machine Works, Inc., Dept. C&E, 625 Birch St., Perry, Okla., or use the Request Card that is bound in at page 18. Circle No. 54.

Self-propelled concrete breaker—a folder describing the Ottawa Hydra-Hammer. Action photos show the self-propelled, one-man-operated unit breaking concrete pavement, tamping backfill, cutting asphalt, etc.

Write to the Ottawa Steel Division, Young Spring & Wire Corp., Dept. C&E, 435 S. Main, Ottawa, Kans., or use the Request Card at page 18. Circle No. 107.

Soil-cement stabilization—a booklet entitled "The ABC's of Soil-Cement Stabilization." Answers questions as to what soil-cement is, where it's used, how it's processed, etc. Gives data on operational procedures and includes helpful charts, as well as photos of typical jobs.

Write to the Pettibone Wood Mfg. Co., subsidiary of Pettibone Mulliken Corp., Dept. C&E, P. O. Box 620, North Hollywood, Calif., or use the Request Card at page 18. Circle No. 6.

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**Building Trades Department
legislative conference
scheduled for this month**

The AFL-CIO Building Trades Department Executive Council, meeting in Miami, Fla., approved a 6-point legislative program, and made plans to call a conference this month to speed the program through Congress.

Top priority is given the Kennedy-Ervin anticorruption bill, with special emphasis on the bill's provisions

allowing pre-hire agreements in the construction industry.

Another major legislative aim is repeal of the Taft Act's 14(b) clause allowing states to enact right-to-work laws. Other points of the department's legislative program are:

1. Modernization of the Davis-Bacon Act to extend its coverage and include fringe benefits such as health and welfare pension and vacation plans.
2. Enactment of a comprehensive housing program along the lines of the bill sponsored by Sen. Joseph S. Clark.
3. Passage of the Monroney bill to aid airport construction.

4. Enactment of the Murray-Met-calf bill to set up a program of federal aid for school construction.

**California laborers' local
signs 3-year pact with
sand and gravel contractors**

Falling into line with the Teamsters and Operating Engineers, Laborers Local 585, Ventura County, Calif., signed a 3-year agreement with rock, sand, and gravel contractors that provides for 36 cents more in wages.

The first raise—8 cents an hour—is retroactive to January 1, and an additional 5 cents comes due July 1, making the first-year increase 13 cents. On January 1, 1960, 12 cents

more will be added to hourly rates and a final 11-cent raise will take effect January 1, 1961.

The Laborers' settlement follows similar agreements made by Operating Engineers Local 12 and Teamsters Local 186.

**New Jersey state council
refuses to endorse
contractors' no-strike plan**

The New Jersey State Building and Construction Trades Council has refused to give its blessing to a no-strike, no-lockout proposal made by the Building Contractors Association of New Jersey. As predicted by council president Sal Maso, the body decided at a recent meeting that endorsement of the employers' plan would be an improper infringement on the autonomy of affiliated unions.

The council also turned down the contractors' request that a joint committee be formed to study wage scales throughout the state and to make recommendations to groups negotiating new agreements this spring.

BCA asked the council to approve a plan whereby local negotiating teams would enter into a "no-strike, no-lockout pledge," at the start of bargaining, with an agreement to submit to arbitration all issues that could not be resolved peacefully at the bargaining table. In making the proposal, BCA reminded the council of last year's series of strikes throughout the state, and said that since most New Jersey crafts already have the highest wage scales in the country, it would be an injustice to union members to again permit work stoppages.

**New contract gives
Houston laborers
25-cent package**

Houston laborers will be getting \$1 an hour as their wages go up 15 cents an hour under a new contract negotiated by the union and the Associated General Contractors.

The estimated 800 to 700 workers will have another nickel added to wages on November 1, 1959, and a final 5 cents on November 1, 1960, under the terms of the agreement which is due to expire November 1, 1961. No other contract changes were made, according to an AGC official.

Meanwhile, negotiations between AGC and the Operating Engineers are in abeyance, with the union continuing to work under an agreement which expired in the spring of 1961. Working conditions are the stumbling block, with the issue the subject of still-to-be-resolved litigation.

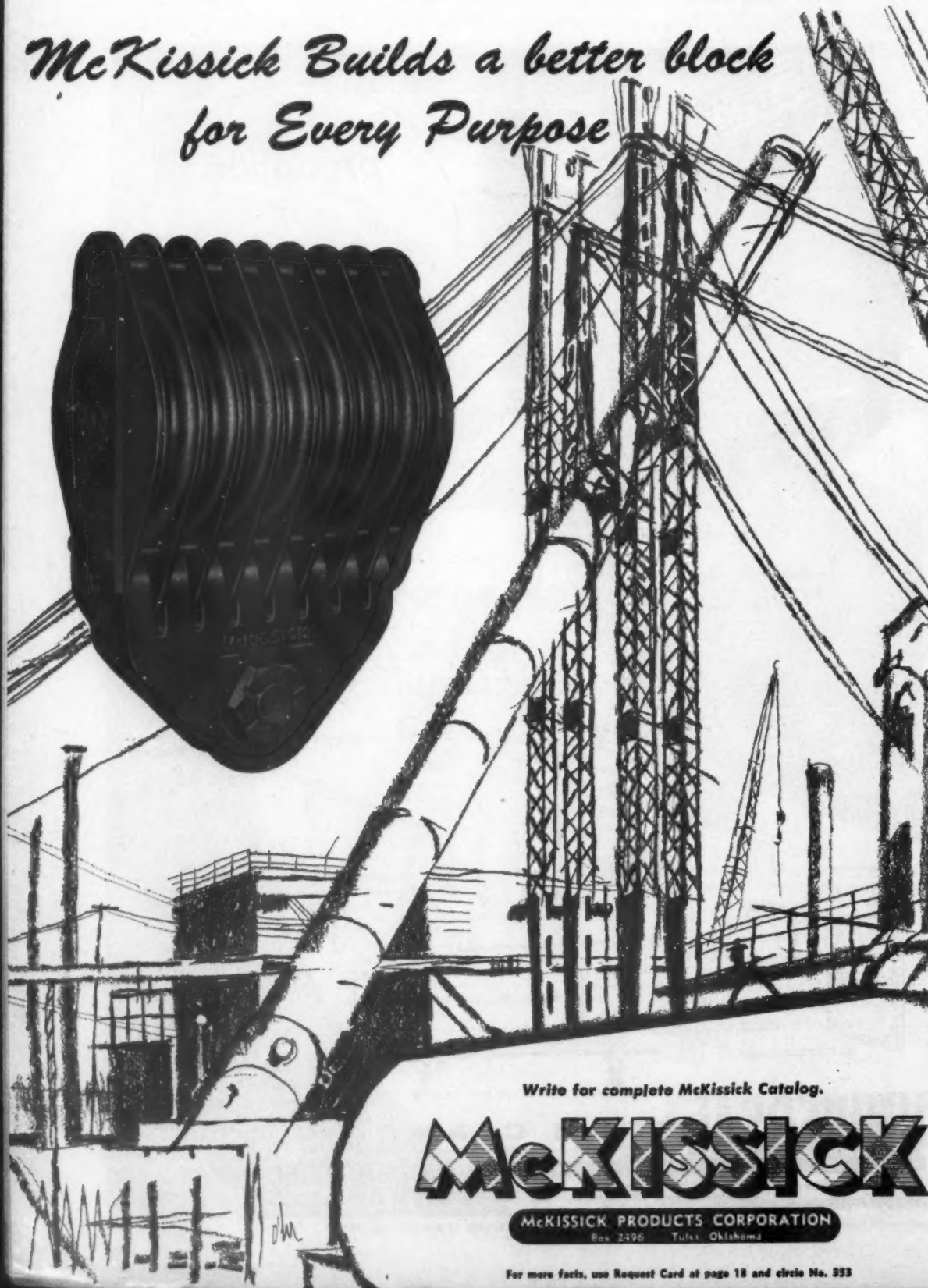
**Welfare-plan administrators
given reminder
of report-filing deadline**

Labor Secretary Mitchell reminded administrators of employee pension and welfare plans that, under provisions of the 1958 Disclosure Law, they must file descriptions of their plans with the Labor Department not later than April 1.

The requirement applies both to plans administered unilaterally by unions or employers and to those managed jointly.

CONTRACTORS AND ENGINEERS

McKissick Builds a better block for Every Purpose



Write for complete McKissick Catalog.

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 393

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**AGAINST THE BACK-
GROUND** of the three
original buildings of
Pittsburgh's Gateway
Center, a 17-ton grillage
is lowered into place
for Four Gateway Center—the new 22-story
building for Equitable
Life Assurance Society.
U. S. Steel's American
Bridge Division is han-
dling steel erection and
fabrication for the build-
ing, which will be
sheathed in steel and
tinted glass.

An all-time high of over \$21 million in highway spending for Ne-
vada was reached in 1958. The cost of construction for 305 miles of
new or improved highways stands at \$21,979,544 for the entire year,
a 40 per cent increase over the previous peak spending year, 1957.

IT's NEW - - The Campbell Sliding Cab

for the models HU, HN, HO, H70, and H90

"Payloaders"!!!



This sturdy, modern design offers features long
desired by "PAYLOADER" operators, among
them—Sliding top, ball bearing mounted on
steel channel—Rubber seals to insure weather
tightness—Permanently mounted access ladder
—Rear view mirror—Tinted safety glass wind-
shield and skylight.

Investigate this completely new design in "Pay-
loader" Cabs by calling your "Payloaders" dis-
tributor, or contact

**CAMPBELL DETACHABLE CAB CO.
WAUCONDA, ILLINOIS**

For more facts, use Request Card at page 18 and circle No. 355

Manual details practice on concrete finishes

A simplified "Manual of Recom-
mended Practice for Cast-In-Place,
Exposed, Architectural Concrete Fin-
ishes" is available from the Concrete
Industry Board, Inc. Each of the im-
portant phases, from specifications
through construction, is spelled out
in detail for the architect, engineer,
and contractor.

CIB comments accompany each of
the eight sections on general recom-
mended practices, materials, form-
work, reinforcement, placing con-
crete, stripping and curing, finishing,
and samples.

The 5x7-inch pocket-size manual
is priced at \$1 and may be obtained
from CIB, Room 2503, 220 E. 42nd
St., New York 17, N. Y.

Yaun opens new plant

Yaun Mfg. Co., Inc., Baton Rouge,
La., has a new plant in McComb,
Miss. Located along the Illinois Cen-
tral Railroad and U. S. 60, it has
15,000 square feet of floor space.

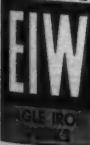
BREAKER BALLS of Ni-Hard and Semi-Steel



SPEED BREAKING, CRUSH- ING and DEMOLITION JOBS

Eagle Breaker Balls available of tough
semi-steel for regular jobs, and of abra-
sion resistant Ni-Hard nickel-chromium-
iron alloy for toughest jobs. Pear shaped,
with easily replaced hook. In five sizes:
1500 lbs. to 6500 lbs. (Ni-Hard up to
4000 lbs. only). Spherical or Drop Ball
available for use with cranes equipped
with electro-magnets.

SINCE 1872



SEND FOR
BULLETIN 558

Describe Breaker Balls,
Ball Size 1255 covers Eagle
Pile Hammers and Line
Weights. Catalog 58 gives
complete information on
Eagle Washing-Classifying-
Dehydrating Equipment for
aggregates, stone and ore.

EAGLE IRON WORKS,
139 Nelson Avenue, Des
Moines, Iowa.

For more facts, circle No. 354

MARCH, 1959

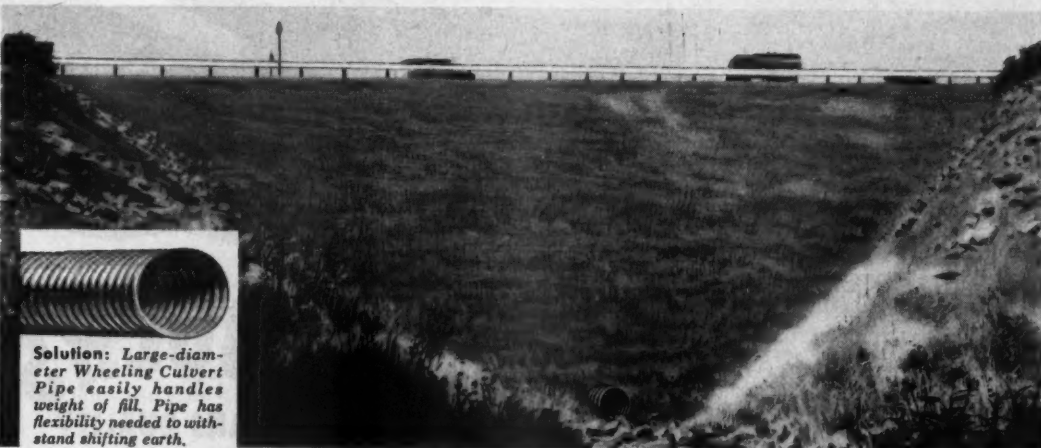


METAL CULVERT PIPE BY WHEELING



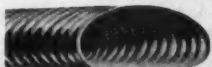
Problem: How to drain
this deep draw without
using costly bridge. Diffi-
culty is increased be-
cause of shifting earth.

Have to drain deep, shifting fills?



Solution: Large-diam-
eter Wheeling Culvert
Pipe easily handles
weight of fill. Pipe has
flexibility needed to with-
stand shifting earth.

Use this flexible metal culvert pipe!



Wheeling Pipe Arch—a wide, comparatively
flat-bottom type of corrugated metal pipe
for use where headroom is limited.



Small-diameter Wheeling Metal Pipe—ideal
for farm and home drainage requirements.

Although ordinary heavy, rigid pipe
looks stronger, it often cracks and breaks
under deep or shifting fill. **But not
Wheeling Corrugated Metal Culvert Pipe!**

Flexible Wheeling Pipe adjusts to
changing pressures. Amazingly strong
because it uses the surrounding earth to
help carry the load.

Wheeling Metal Culvert Pipe or Pipe

Arch comes in copper-bearing steel or
copper-bearing pure iron, plain galva-
nized or bituminous coated (with or
without paved invert). Available in a
wide range of gauges and diameters.

Ask your nearby Wheeling culvert
plant, warehouse or sales office for full
details. Wheeling Corrugating Company,
Wheeling, West Virginia.

WHEELING CORRUGATING COMPANY • IT'S WHEELING STEEL!

Immediate delivery on all stocked items from these warehouses: Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City,
Louisville, Madison, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis. Sales Offices: Atlanta, Houston

For more facts, use Request Card at page 18 and circle No. 356

Tractor-parts rebuilders form national association

A national association for independent tractor-parts rebuilders, parts manufacturers, suppliers, and distributors has been formed by persons from all sections of the country.

Newly elected officers are: Sam B. Maximon, president; Edwin A. Hess, vice president; Harry Cooke, secretary; and Clarence A. Goss, treasurer.

The new officers will determine a national headquarters location, select an executive secretary for the association, choose an appropriate name and seal for the association, recommend a detailed high standard for rebuilding to which all members

must subscribe, and set up the first annual convention for June.

All preliminary considerations were developed by a 6-man Steering Committee composed of William P. Hiltz, E. J. Hughes, Sam Maximon, Al Mendaloff, Herb Hales, and Clyde Bunting.

A-C renames division

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has changed the name of its Nuclear Power Division to the Atomic Energy Division. The new designation is more in keeping with the firm's over-all atomic operations.

In line with the move to separate the two facets of atomic work, A-C has also formed a Nuclear Power Department that will be responsible for the Atomic Energy Division's activities in the nuclear-fission field. C. R. Braun is manager of the department.

Pipe rig cuts stringing time

Liquid fuel supplies will get to military equipment in the field three times faster than they do today when a new pipe transporter goes into use. The rig was developed by the U. S. Army Engineer Research and Development Laboratories.

The transporter consists of a

standard 2½-ton ordnance trailer with 6-ton trailer. A hydraulic boom behind the cab is used to unload pipe from the trailer, which has a hook for carrying grooved-type couplings, complete with gaskets, nuts, and bolts.

The rig will replace a truck-drawn 1½-ton trailer, from which pipe had to be unloaded manually.



Sigunit makes air-applied mortar rapid-setting and water resistant. Sigunit is well suited for work on tunnel linings, sea walls and spillways as it adheres to damp and leaking concrete surfaces. Water and rising tides will not wash out or cause structural weakness at the waterline.

Sigunit saves time and money by helping maintain your job schedule. For complete information, write or wire for Bulletin SIG-56.

Ad. No. 24-3



DISTRICT OFFICES: ATLANTA • BOSTON • CHICAGO
DALLAS • DETROIT • NEW ORLEANS • PHILADELPHIA
PITTSBURGH • SALT LAKE CITY — DEALERS IN ALL
PRINCIPAL CITIES — AFFILIATES AROUND THE WORLD

For more facts, circle No. 357

Koehring buys drill firm

The Stardrill-Keystone Co., Beaver Falls, Pa., has been purchased by Koehring Co., Milwaukee. Stardrill-Keystone manufactures construction, water-well, oil, gas, mineral, and quarry drills and rigs. Included in the purchase are the main plant, two affiliate operations, a sales office, all machinery and equipment, inventories, and the company name. Harold Ruttenberg, president, will continue with Stardrill-Keystone.



**ON THE JOB
... ON THE TOUGHEST JOBS**

**ARCTIC
BOY**

portable water coolers



... built to take a beating on construction jobs, in mines, on the farm, railroad crews, on service trucks ... wherever men work and the going is rough.

They keep drinking water cool and sanitary, keep worker efficiency up. And note these features:

- HOT DIPPED Galvanized or stainless steel insets
- Sparkleen plastic liner ... non toxic, prevents corrosion
- Large opening, easy to ice and clean
- Extra large insulation space

Send for free booklet
"Care and Use of Your
Cooler." Write Dept. C-1
SCHLUETER MFG. CO.



St. Louis, Mo.

For more facts, use Request Card at page 18 and circle No. 358

**DROP DECK
OR LEVEL DECK
TRAILERS**



**25 TON OR 35 TON
CAPACITY TRAILERS**

As a result of Rogers engineering and manufacturing experience we are able to produce well balanced, functionally designed trailers at new low prices.

These TVT Trailers are designed to improve basic parts, reduce costly production operations and utilize standard shapes of lighter, stronger alloy steel.



ROGERS HEAVY DUTY TRAILERS

ROGERS BROS. CORP. ALBION, PENNA.

Export Office: 50 CHURCH ST., NEW YORK 7, N. Y. U. S. A. Cable Address: Brosites

For more facts, use Request Card at page 18 and circle No. 359

The 25 ton trailer weighs 9000 pounds and the 35 ton unit is proportionately light.

They incorporate in every detail the performance features and durability for which Rogers Trailers have long been noted.

Get the TVT Trailer story and be convinced. See or write to your Rogers dealer or to the factory for literature.

Note the rugged design of this oscillating member—widely spaced mounting brackets to insure maintenance of alignment, the typical Rogers non-tapering stub shafts, the heavy duty roller bearings and the easy means provided for grease lubrication.



CONTRACTORS AND ENGINEERS

Piles of broken concrete are money in the till for Iowa highways

Piles of broken concrete have proved to be money in the till to the Iowa State Highway Commission. The old concrete, salvaged from curbs, fumes, and bridge abutments, and highways that have been widened or rebuilt, is being crushed for use as temporary surfacing for detours and runarounds, and the surfacing of mailbox turnouts and driveways.

Not only does the stability of this product appeal to highway commission engineers, but the material can be produced at a substantial saving over the price of shipped-in rock.

In the Sioux City area, where rock quarries are almost non-existent, the price of shipped-in rock is about \$4.25 per cubic yard, while the price of the crushed concrete ranges from \$2.10 to \$3.50 per cubic yard, depending on the location of the stockpiles and the quantities being crushed.

Each fall, the highway commission advertises for bids for the crushing of the concrete material salvaged during the preceding construction season, and many contractors have been attracted to this operation as a means of occupying their men during the slack winter months.

In areas where quarries are plentiful and crushed rock can be produced for less than the crushing of old concrete, the reclaimed material is used for earth and ditch fills, rip-rap for lake and river banks, and as a soil erosion preventative along cuts and hillsides.

Air Reduction appoints

Dr. Albert Muller, assistant to the president of Air Reduction Sales Co., the industrial gases and welding products division of Air Reduction Co., Inc., New York City, has been appointed vice president of that division. Prior to joining the division in 1967, Muller was director of metallurgical research at the firm's Central Research Laboratories.

Traffic on Arizona highways increased 6.2 per cent in January.

For more facts, circle No. 360→

SCAFFOLD FRANCHISES SALES - - RENTAL

Established company manufacturing complete line of scaffold equipment which has been nationally accepted for all fields—Class A, commercial and light construction, shoring, concrete, maintenance—offers rental-sales franchises in a number of uncommitted areas with heavy profit potential. Interested parties, please write:

SUPERIOR SCAFFOLD CO.
Dept. CAE
3624 Bankfield Avenue, Culver City, Calif.

CRANES NEAR THE END OF THEIR JOB OF cleaning out 3,000 yards of rock from inside the cellular steel sheet-pile cofferdam so that work can proceed on the new high-lift New Cumberland Dam at Stratton, Ohio. The cofferdam, adjacent to the locks on the Ohio side of the river, consists of 19 cells, each 55 feet in diameter, with connecting arcs. Dravo Corp., Neville Island, Pittsburgh, is handling the work.



OLIVER



VERSATILE OLIVER 770—a high-income earner at any job you give it throughout its vast work range. 50-plus h.p. gas or diesel. Mounts 3/4-yd. loader and big choice of other attachments. Also, "Reverse-O-Torc" transmission with torque converter and clutch-free reversing for high-speed loading.

BIGGEST PROFIT MULTIPLIERS ON WHEELS

Versatility! That's the big thing about these new Olivers. They have the most highly developed, richest rewarding versatility yet achieved. They're the *surest thing* on wheels for stepping up your job speed, job range and job earnings!

In every department you'll see important new Oliver advancements—in engine efficiency...work-hustling

traction...easy, instant control response...fast-action work attachments for any and all your jobs!

See the *big jump* ahead in tractor performance and earning power! Check the all-new Oliver fleet at your Oliver distributor's.

THE OLIVER CORPORATION
Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio
a complete line of industrial wheel and crawler tractors and matched allied equipment

VERSATILE OLIVER 550—has handy, compact size, yet handles surprising range of digging, loading, lifting, clearing, materials-handling assignments. Gas or diesel, independent PTO, oversized hydraulic system.

VERSATILE OLIVER 660—ablest of its class with 1/2-yd. trencher and 1-yd. loader. Clean, modern design—high-torque, 64 h.p. gas or 61 h.p. diesel...six forward speeds...rapid travel...simplified controls. Big-production loader has torque converter and finger-tip reversing.

VERSATILE OLIVER 900's—highest combination of power and performance. Three models for the work-matching power you want—Oliver 70 h.p. gas or diesel engine...GM 88 h.p. diesel and torque converter.



A Euclid TS-24 double-barreled scraper, push-loaded by a pair of Allis-Chalmers tractors, picks up borrow for the 4,000-foot stretch where muck has been excavated for the new route between Tampa and Orlando. While the contractor used a scraper spread, the sub worked with dragline and trucks.



Two types of equipment spreads

handle big muck excavation job

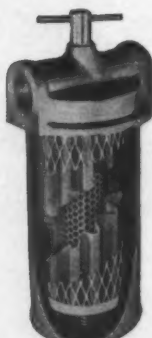
MARVEL Synclinal FILTERS

Simplify Preventive Maintenance on Construction Industry's Hydraulic Equipment

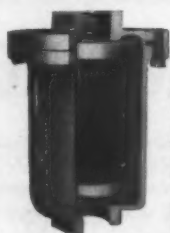


SUMP TYPE
(Cutaway)

MEET
J.I.C.
STANDARDS



LINE TYPE
(Cutaway)



IN-LINE
FILTER

Handles up to 25 G.P.M. of hydraulic oil at very low pressure drop. Monel wire cloth filtering media is available in mesh sizes from 30 to 200. Cartridge is easily removed for cleaning.

Change costly

"DOWN TIME"

to profitable

"OPERATING TIME"

Marvel's BALANCED Synclinal design offers 2½ times more ACTIVE filtering area with sufficient storage capacity for filtered-out damaging particles. Easily disassembled, thoroughly cleaned and re-assembled, on the spot in minutes. No throw-away parts, no moving parts to wear out or break down.

OVER 800 Original Equipment Manufacturers install MARVEL SYNCLINAL FILTERS as standard equipment for dependable protection on all hydraulic and other low pressure circulating systems.

A SIZE FOR EVERY NEED

Line or sump type filters in capacities from 5 to 100 G.P.M. Greater capacities attained by multiple installations. Monel mesh sizes from 30 to 200.

IMMEDIATE DELIVERY

Our catalogs contain complete engineering data and dimensional charts of all models and sizes. You can order a filter to meet your specific requirements and get IMMEDIATE DELIVERY.

For further information, write,
wire, phone or use coupon below.



Catalogs
containing
complete data
available
on request

MARVEL ENGINEERING COMPANY
7227 N. HAMLIN AVE.
CHICAGO 45, ILLINOIS
Phone: JUMPER 8-8023



Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated:—

- ☐ Catalog #108—For Hydraulic Oils, Coolants, Lubricants
- ☐ Catalog #200—For Fire-resistant Hydraulic Fluids (Aqueous Base)
- ☐ Catalog #400—For Fire-resistant Hydraulic Fluids (Synthetic)
- ☐ Catalog #301—For Water

CE-3

Name
Company
Address
City
State

For more facts, use coupon.

Removal of over 165,000 cubic yards of muck and uncertain subsurface conditions at a bridge site were the two biggest problems on a 4½-mile-long project near Plant City, Fla.

This \$2,486,000 contract, held by Ballenger Paying Co., Greenville, S. C., is on a new interstate road that will run between Tampa and Orlando. Ballenger's contract, extending a completed 6-mile section, opens the road between Plant City and Lakeland. The 24-foot unreinforced-con-

crete roadways are separated by a 40-foot grassed median strip. A 4-foot-wide open ditch running down the center line of the median prevents automobiles from crossing the roadways at unauthorized locations. Roadways consist of an 8-inch slab with 8-foot outside shoulders of surface-treated crushed limestone.

Muck excavation

The grading of a 4,000-foot stretch of roadway was subcontracted from

Standard Steel ASPHALT TRANSPORTS



LIGHTEST WEIGHT—HIGHEST CAPACITY

GLASS FIBRE INSULATED—HEATER TUBES CONICAL OR ELLIPTICAL DESIGN

CUSTOM DESIGN—Standard Steel Asphalt transports are designed especially for your specific hauling problem. We will be glad to recommend detailed specifications to fit your need.

INSULATING EFFICIENCY—Glass fibre insulation is standard. It will not slip out of place and will not deteriorate due to vibration. It is held in place by wooden spacers which also act as support for the outer shell.

CONICAL OR ELLIPTICAL—Standard asphalt tanks are available in either conical or regular elliptical shapes.

CORRECT ACCESSORIES—Optional equipment is important. Engines, pumps, burner equipment, etc., are available to fit your most exacting requirements.

See Your Dealer or Write for Literature

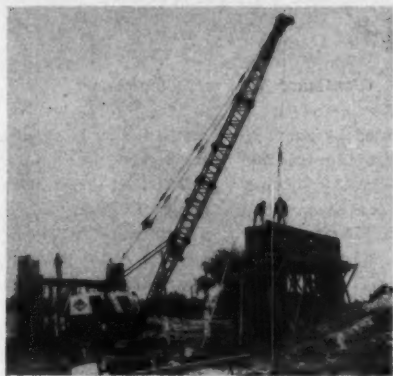


OTHER PRODUCTS
Asphalt Pressure Distributors,
Maintenance Distributors, Tar
Kettles, Patch Rollers, Supply
Tanks, Tool Heaters, Asphalt
Tools, Construction Brooms.

Standard Steel Works, Inc. NORTH HAVEN, CT

For more facts, use Request Card at page 18 and circle No. 361

CONTRACTORS AND ENGINEERS



A Lima crane strips plywood forms for the most difficult bridge job on the 4½-mile stretch near Plant City, Fla. Because of unstable subsurface conditions at the site, steel H-piles had to be driven 290 feet for sufficient bearing. Prestressed-concrete piles are also used in the structure.

Subsurface conditions require over 7,000 feet of H-piles and 5,600 feet of prestressed piles to obtain bridge bearing

Ballenger by A. G. Wimpy, Dahlonega, Ga. Within this section was the 800-foot-long area from which 150,000 cubic yards of muck had to be removed. The excavation was carried down to depths of 22 feet for widths varying from 340 to 800 feet. The widest area was located where an interchange was to be built over railroad tracks and State Route 39. Just at this one location, over 750,000 cubic yards of borrow was needed to build up the bridge approaches.

The subcontractor used about twenty 12-yard dump trucks, loaded with borrow by a crane with 2½-yard dragline bucket, to haul the backfill from the pits to the roadway excavation. Two tractor-dozers were used to push the backfill into the muck excavation.

Roadway grading

Excavation on this project amounted to about 500,000 cubic yards, which
(Continued on next page)

SWENSON SPREADERS Speed Sealcoating!

Spreads Salt or Chloride for DUST CONTROL or SOIL STABILIZATION

write for complete information
SWENSON SPREADER & MFG. CO.
Lindenwood, Illinois

For more facts, use Request Card at page 18 and circle No. 363

Big Ripper Tackles Tough Rock Jobs

Designed to use full power of IH TD15, TD18, TD20 or TD24



The tremendous power of the IH TD15, TD20 or TD24, plus the 10,000-pound Greenville tractor-mounted rock ripper, shatters rock and packed earth for easy scraper loading. On many jobs explosives, shovels and trucks are eliminated. Put this power-packed team to work for you. Your IH dealer can give you the facts. Let him show you how you can save as much as 25% on any earth or rock moving job.

LIVE SWIVEL ACTION

Shanks swivel 15° in either direction... follow tractor like a trailer. Points have live action that shatters rock like a jack hammer.

RUGGED POWERFUL SHANKS

Scientific contour gives extra strength at strain points and pulls points down deep... rocks roll out and clear of head-frame. Made of tough, heat-treated, manganese-steel. Mount one, two or three shanks as needed.

POSITIVE CONTROL

Double-acting hydraulic system provides fingertip control and puts full tractor weight on points for fast, deep penetration.

DRAWBAR TAKES PULL

The ATECO drawbar replaces the tractor drawbar and drawbar brackets. Clevis is accessible with ripper installed.

RIP AT ANY DEPTH

Easily adjusted to permit settings as deep as 24". Points are always at most desirable angle for best penetration and splitting action. Points are easily replaced.

WRITE FOR Greenville Bulletin IH-558. It gives complete data on the Greenville-Ateco ripper.

See it at your International-Harvester Dealer's

GREENVILLE
STEEL CAR COMPANY
ATECO DIVISION
Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 362

MARCH, 1959

STABILIZE BASE THE ROME WAY



Rome Disk Plowing Harrow pulverizes, blends, compacts, bonds lifts

See the action of a Rome Disk Plowing Harrow as it cuts and levels a fill: note how it churns and pulverizes lumps, blending materials together, cutting deep into the subbase to bond the lift and base together. Look at how flat and smooth the fill is after the disk has done its work. The Rome way is the most efficient method ever devised for stabilizing and blending base on roads, dams, airports and fills.

Other uses include blending in-place materials like soil cement into a compact, homogeneous mixture—drying out a muddy cut or haulroad—cutting and chopping brush and small trees.

There's a size and type to match your specific needs. Call your Rome-Caterpillar Dealer today! Rome Plow Company, Cedartown, Ga.

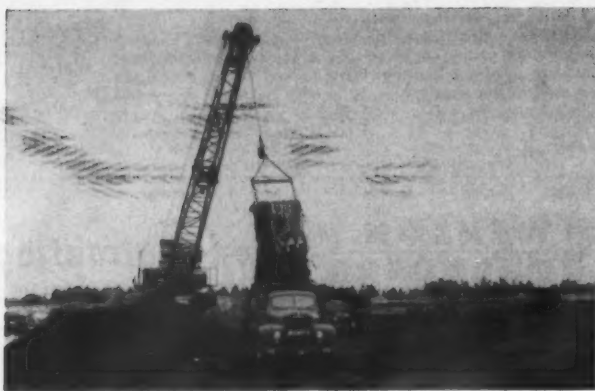


ROME

YOUR ROME DEALER
IS YOUR
CATERPILLAR DEALER



For more facts, use Request Card at page 18 and circle No. 364



A Lima with 2½-yard dragline bucket charges a fleet of Mack 12-yard dump trucks in one of the ten borrow pits on the project.

(Continued from preceding page)

had to be supplemented by about a million yards of borrow to reach the fill requirements. About 8,000 cubic yards were moved in a 9-hour workday by Ballenger and the subcontractor. The bulk of the hauling for both contractors was from the ten borrow pits; Wimpy used a dragline-dump truck operation, and Ballenger used a scraper fleet.

Eight of the ten borrow pits were furnished by the State Road Department; an additional pair was purchased by Ballenger because they

reduced the haul distance of the scrapers.

Ballenger used a fleet of six scrapers that were push-loaded in the borrow pits by a pair of tractors that operated in tandem for a faster loading cycle. Scrapers spread the fill in 6-inch lifts to build up the roadway grade and they also handled compaction of the fill. The 12-inch stabilized subbase that tops the roadway fill was compacted by the earth-moving equipment, pneumatic rollers, and a vibratory compactor.

BRADEN WINCH

responds to remote, push-button pole-setting unit

Tel-E-Lect Products, Inc. is producing a new hydraulically equipped truck with remote control pole-setting unit. Operator, standing outside of truck, controls all equipment from one simple remote control head.

The trucks are equipped with BRADEN M6-15AES Winches, and perform perfectly as an integral part of the control unit.

This is another example of the ingenious ways BRADEN Truck Winches can be used to speed and lighten complicated handling jobs.

Close up of the TEL-E-LECT Remote Control Head.



write for complete winch catalog.

BRADEN WINCH COMPANY
P. O. Box 547, Broken Arrow, Oklahoma

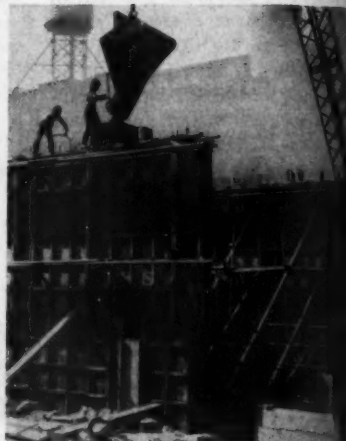


"In Service Around the World"

For more facts, use Request Card at page 18 and circle No. 365

CUT CONCRETING COSTS WITH Richmond FORMING METHODS

You can save time and money by making forms with your lumber and Richmond Form-Tys and Accessories.



Setting, pouring and stripping forms goes faster when you use the Richmond Snap-Ty Form System. With this system you

can build your own prefabricated panels. Form erection is reduced to an assembly procedure of the reusable low cost panels into durable forms suitable for continuous pours.

RICHMOND SNAP-TYS FOR TYING LIGHT CONCRETE FORMWORK



½" or 1" BREAK SNAP-TY ASSEMBLY—3000 LB. OR 5000 LB. SAFE LOAD

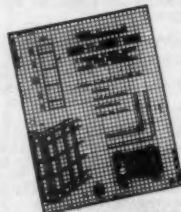
Richmond Snap-Tys are specifically designed for quick, easy and accurate erection of light foundation wall forms. With Richmond accessories they will give you a worthwhile saving from start to finish.

Spreader washers of ample size are precisely located to give the exact wall thickness. Head washers of special steel are securely held by a clean, well formed upset on each end of the tie to give positive bearing on the Tyholder, thus trans-

mitting the full strength of the Snap-Ty to the walers and preventing the possibility of costly breaks.

Break points are set back from the wall face to permit easy, clean stripping and prevent spalling of the concrete. The small tie holes and indentations of the washers, or cones if they are used, are easily pointed.

Richmond Snap-Tys are available with safe loads of 3,000 lbs. and 5,000 lbs.



Richmond does not make, sell or rent forms. Richmond sells Form-Tys and accessories and shows you how to make your own forms which can be used over and over. Profit by this fast, easy method for erecting light foundation walls. Send for your FREE copy of the Richmond Snap-Ty Form Book, containing complete diagrams and forming data. At the same time, ask for the current Richmond Handbook, which describes the full line of Richmond-engineered tying devices and accessories.

Write to: Richmond Screw Anchor Company, Inc.
816-838 Liberty Ave., Brooklyn 8, N.Y.
or 315 South Fourth St., St. Joseph, Mo.

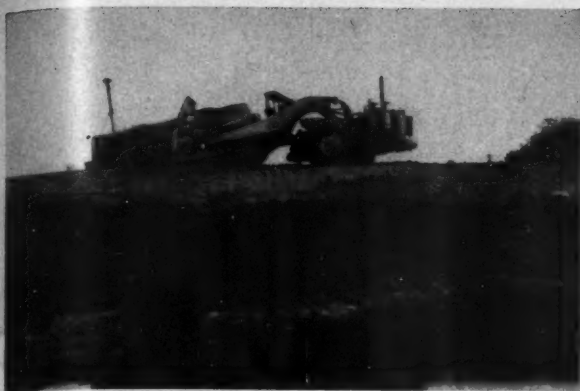


Some of the new accessories developed by Richmond for easy on-the-job assembly of prefabricated modular form panels.

For more facts, use Request Card at page 18 and circle No. 366



CONTRACTORS AND ENGINEERS



A Euclid TS-18 dumps fill material for one of the bridge approaches. The fill is spread in 6-inch lifts and compacted by the earthmovers.

Equipment on the job

20 Mack 12-yard dump trucks
Lima crane with 2½-yard drag-line bucket
Two Cat D7 tractor-dozers
Three Cat DW21 scrapers
Two Euclid TS-18 scrapers
A Euclid TS-24 scraper
Allis-Chalmers HD-19 and HD-21 tractors
Cedarapids vibratory compactor
Pneumatic rollers
Vulcan 50-C hammer
Symons form hardware
Northwest 80-D crane
Bay City 35-ton truck-crane

Extra-long piles

The contractor planned to use prestressed-concrete piles to support bridge structures, but at one location 14-inch H-piles were required. Over 7,000 linear feet of H-piles was driven, together with about 5,600 linear feet of 18-inch prestressed piles, to obtain the necessary bearing for the bridge.

The H-piles were driven to depths of 200 feet before the 35 to 50-ton

bearing was reached. The only explanation for this unknown and unforeseen subsurface characteristic was the possibility of an underground stream that crossed the roadway alignment at this location.

A total of 20,000 linear feet of 18-inch prestressed piles was driven on this project for other structures. The bridge piers were cast in place with ready-mix concrete and ¾-inch-thick plywood forms backed with 2×4-inch studs on 12-inch centers. Bridge stringers were prestressed-concrete girders furnished by Florida Prestressed Concrete Co., Inc., Tampa.

Girders were erected by a subcontractor using two cranes lifting from the girder end-points. The longest member erected was 82 feet. A total of 19,000 linear feet of prestressed girders was required for the many structures on the project.

Personnel

L. G. Frierson was the bridge superintendent, and John Thompson, the grading superintendent for Ballenger Paving Co. Wallace M. Wright is the resident engineer, and W. M. Redding, Jr., the project engineer for the Florida State Road Department. THE END



Pneumatic-tired SB-60 in travel position. Screed, feeder and idler crawlers under hopper hydraulically raise for travel.

Pneumatic-tired SB-60 (shown). Model SA-60 has crawlers 3 ft. high.

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CRAWLERS or PNEUMATICS

Model SA-60

Model SB-60

Designed throughout for heavy-duty, high-capacity, low-maintenance operation, these two new Barber-Greene offer the ultimate in high-tonnage production. They reduce nonproductive time, lay more miles per day at less cost per ton.

New design concepts give unequalled speed and maneuverability... 100% power steering (no clutches—no steering axle)... faster truck contact, discharge and release... feeder and screw speeds independent of travel speed... new automatic feed control... articulated, stabilized suspension... new unitized-construction... improved automatic leveling... hydraulically operated, high-speed tamper.

FOUR DIFFERENT FINISHERS. Only Barber-Greene offers a line of four finishers: the new 873, which paves on crawlers and travels on rubber; the new heavy-duty SA-60 and SB-60, shown above; and the famous 879-B unmatched for all types and sizes of jobs.



Self-cleaning, hydraulically operated hopper extends to extreme rear of chassis where gates are located.

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For more facts, circle No. 367

MARCH, 1959

SP-1-F

The best compaction job on the granular material on U. S. 10 near Detroit Lakes, Minn., is done by a Bros 13-wheel roller pulled by an International WD-9 farm tractor. Rear tires of the tractor have been filled with fluid; and concrete cast in the rim of the drive wheels provided extra weight.

Old method proves best in compacting granular base for highway grading project

Getting good compaction of the granular fill and base course was the big problem in grading a section of U.S. 10 near Detroit Lakes, Minn.

To bring the upper part of the grade and the base courses up to 98 per cent of maximum density, the general contractor, W. Hodgman & Sons, Inc., Fairmont, Minn., experimented with several types of compacting equipment.

Sheepsfoot rollers were not too effective on the subgrade, for they punched into the granular fill without compacting it. On the base course, a vibratory roller was tried without success; it tended to displace the material. Although a self-propelled pneumatic roller did a better job, the drive wheels were apt to chew up the surface.

Finally, a machine was found that could beat the nonplastic material into submission. It was a big old International farm tractor pulling a Bros 13-wheel roller. Not a very impressive rig, but it rolled the daylights out of the two base courses and even went to work on parts of the subgrade.

Hodgman's 3.5-mile contract is part of a general plan of the state highway department to improve U.S. 10 from Wadena to Moorhead. Some of the work involved the construction of a 2-lane concrete roadway alongside the existing highway. In marked contrast to this is the section of the road built by Hodgman on the east side of Detroit Lakes. It is a stretch of 4-lane divided highway surfaced with bituminous concrete; the two 24-foot roadways are separated by a depressed median strip 30 feet wide.

Grading

The moving of the million yards of dirt on the contract, subbed to Sellin Bros., Hawley, Minn., was slowed down by the presence of peat bogs. The boggy material had to be excavated sometimes to depths of 12 feet to remove it from the roadbed.

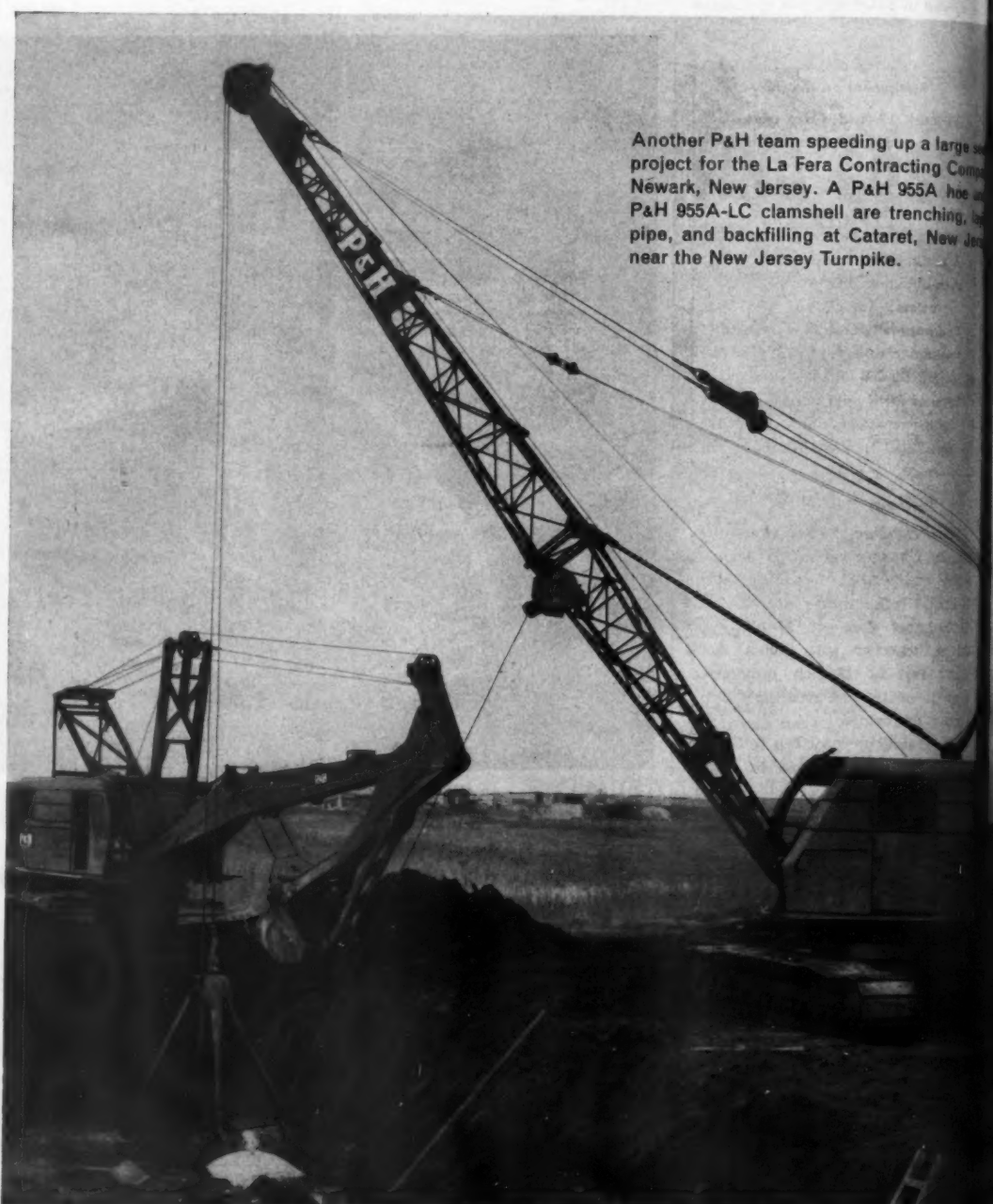
In this operation, a Marion 2½-yard dragline, working from the center of the grade, swung the muck off to the sides. Scrapers and dozers built up the fill on which the dragline worked.

The grading equipment generally worked in two spreads. The rubber-tire equipment included two big Euclid TS-24 and three S-12 scrapers. For the shorter hauls, the contractor used three Cat 80 scrapers pulled by D8's.

(Continued on page 162)



(Additional photos on facing page)



Another P&H team speeding up a large project for the La Fera Contracting Company, Newark, New Jersey. A P&H 955A hoe and P&H 955A-LC clamshell are trenching, laying pipe, and backfilling at Cataret, New Jersey near the New Jersey Turnpike.

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In 45 seconds, 13 tons of minus 3-inch material for the subbase is loaded to an International truck. An International TD-24 is dozing material into the hopper feeding the Kolman 42-inch conveyor. Trucks save time by being weighed on a platform as they are loaded.

(See article on facing page)

After the short haul from the borrow pit, the International AC-180 trucks with Anthony boxes dump the minus 3-inch material in windrows along the center of the roadway.



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sells another because*

P&H "PROFIT-FOOTAGE" means more pipe in the trench early in the day

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The minute you check a pipe laying job you can see that "P&H Profit-Footage" being laid into the trench early in the day.

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And when the going gets extra rough, it's the bonus capacity that comes from the conservative P&H ratings and extra reserve power and strength.

This is what produces that P&H "Profit-Footage." It's also the reason P&H owners have grown 40% in the last 4 years.

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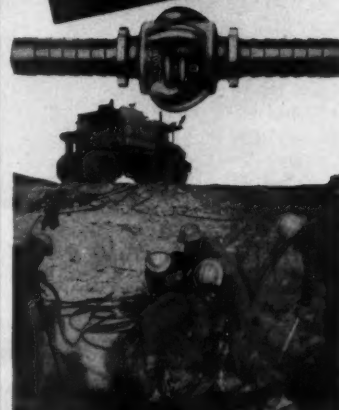
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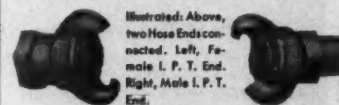
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Tight Pressure -
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**FOR COMPRESSORS, ALL TYPES
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For more facts, circle No. 370



A load of sandy material is picked up in a cut section of the roadway by a Euclid S-12 scraper pushed by a Cat D9.



The windrows of subbase material are spread in 3-inch lifts by an Adams Model 610 grader. Production and laying of the 9-inch subbase was one of the smoothest operations on this job.



**Pumps water
anywhere 2 men can carry it**

**This New
HALE**

**30-T weighs only 143 lbs.
pumps 22,000 G.P.H.**

Two men carry this new Hale pump anywhere you want to move water—fast! Use it for speedy bailing of excavations, elevator shafts, cellar holes, manholes, ditches, etc.

Look at these examples of its speed.

	Approx. Boiling Time
3 ft. of water in a 50' x 20' cellar hole	1 hr.
8 ft. of water in a 6' x 9' elevator shaft	9 min.
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18 in. of water in a 10' x 30' excavation	10 min.

The dependable 30-T features an externally adjusted impeller with "clogless" type operation; a simplified self-priming system that eliminates fussy valves and gadgets; simple "O" ring seals, instead of gaskets. Powered by a 9-h.p. Briggs and Stratton 4-cycle engine.

Also available in HALE'S popular, protective, wrap-around frame; or mounted on wheels. Write to Hale for literature.

Want a pump that can be carried by one man?

... Ask about the Hale 20-T with 7,000-G.P.H. capacity.

HALE FIRE PUMP COMPANY
CONSHOHOCKEN, PA.

A leading name in Fire Pumps for more than 40 years

For more facts, circle No. 371

(Continued from page 160)

Cat D8 and D9 pushers were used to load the scrapers, but sometimes the Euclid TS-24's with their driving rear wheels could pick up loads on their own. Working in clay or topsoil, the big "Eucs" could get enough traction to scoop up a load, but in sandy, granular material they needed a boost.

On the lower levels of the fill, the material was compacted to 95 per cent Proctor by a LeTourneau-Westinghouse Model 120 sheepsfoot roller pulled by a Cat D8. A large number of passes was necessary to get this density, for the granular material resisted compaction. There was enough moisture in the ground to make wetting the fill unnecessary.

Base course

The base-course material was produced in the same two borrow pits that supplied much of the fill for the roadbed. The sandy material was low

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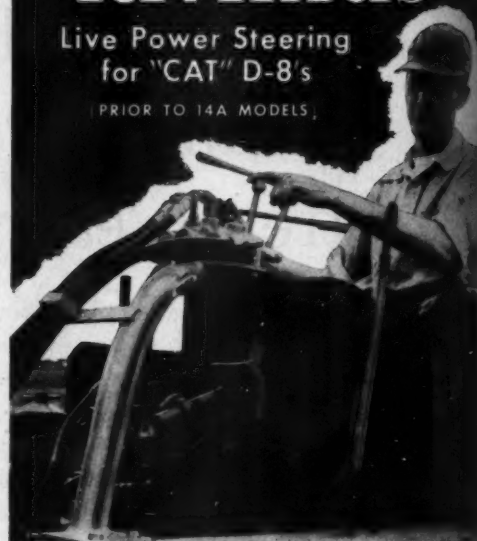
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TIME-SAVER: Operators report they can operate D8's one, sometimes two speeds faster with Rivinius Live Power Steering. Levers move only 1½"; return automatically when released.



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CONTRACTORS AND ENGINEERS

on fines (about 2 per cent) and low on larger rock, but it was the best available.

The subbase, which one pit produced, consisted of minus 3-inch screenings spread to a depth of 9 inches on top of the grade. Topping the subbase was a 6-inch layer of minus 1-inch material. The subbase was produced at one pit by running it through a single screen. The smaller 1-inch base was produced at the other pit by running the material through a Cedarapids Commander crusher.

The minus 3-inch material was swiftly turned out and spread on the roadbed. In the plant setup, two dozers worked the dirt uphill out of the borrow pit. The International TD-24 and the Euclid TC-12 dozers

worked the coarser material in with the fine as they sliced out the dirt. The dozers pushed the material onto a screened hopper that fed a Kolman 42-inch belt conveyor. Generally, the screen was not needed because the pit material ran under 3 inches.

International AC-180 trucks with Anthony boxes rolled in under the conveyor to pick up 13-ton loads. By being weighed on a platform while they picked up the load, the trucks were saved an extra stop. The efficient plant produced about 700 tons per hour.

Since the pit was located at the center of the project a short distance off the road, only eight haul trucks were needed. The trucks dumped their loads to form a windrow in the center of each roadway, and the

material was spread in 3-inch lifts by an Adams 610 grader.

Good compaction was difficult to obtain on the granular material. After much experimenting, it was found that the best rig for this type of soil was an International WD-9 farm tractor pulling a Bros 13-wheel roller. Weight was added to the farm tractor by filling its rear tires with fluid and casting rings of concrete inside the rims of the rear wheels. Also used to bring the base up to 98 per cent of maximum density was a Ferguson 25-ton self-propelled pneumatic roller. On this nonplastic material, a considerable amount of care had to be taken in order to prevent the drive wheels from chewing up the surface.

After the subbase was built, the

6-inch base of minus 1-inch material was spread and compacted in a similar manner. On top of the base, a 1-inch layer of road-mix was placed. The surfacing was completed with two 1½-inch layers of plant-mix asphalt.

Personnel

H. O. "Skin" Krause superintended the job for W. Hodgman & Sons. Harold Sellin and his brother Roy kept the dirt moving on the subcontract.

The work was supervised by the Minnesota Department of Highways' District No. 4, which is based at Detroit Lakes. The district engineer is Lynn M. Carlson, and the resident engineer is Donald J. Aune.

THE END

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New cement group formed

The Acid Proof Cement Manufacturers Association has been formed by a group of manufacturers that produce a substantial portion of their requirements in their own plants, and package and resell the cements under their own names.

Officers of the association are C. E. Smith, The Celcote Co., Inc., president; Dr. C. R. Payne, Electro Chemical Engineering & Mfg. Co., vice president; and The Walter Gebhart Organization, executive secretary-treasurer. Association headquarters are located at 1015 Chestnut St., Philadelphia, Pa.

New York City firm moves

Tippetts - Abnett - McCarthy - Stratton, engineers and architects of New York City, will move by the end of next month to new headquarters in the Seagram Building, 375 Park Ave. The firm will have over 37,000 square feet of space on the two floors they have leased. Present headquarters of the company are at 62 W. 47th St.

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Reduction in BMEP @ 9 BHP	8%	X	X



CLINTON ENGINES CORPORATION

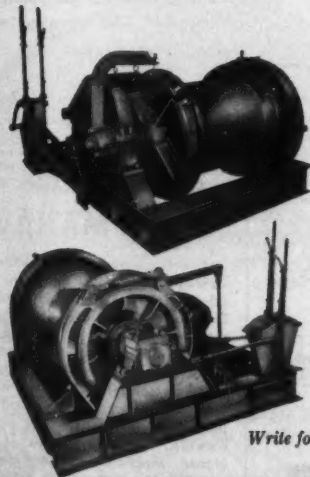
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Take this easy to use combination welder and power unit right to the work. Then do DC welding and operate AC powered tools from the same unit. Invaluable as emergency stand-by service for 110 volt AC power.

You can handle all types of electrodes in all positions, use straight or reverse polarity and weld at 200 amperes continuously if you wish. The Power/Weld's AC power lets you use tools that are essential to complete a wide variety of welding operations.

This low cost unit also doubles as an emergency power source. It will supply 5 KW 110/220 power on a permanent basis. Be sure to see and try the Hobart Power/Weld.

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Equipped with compactor wheels, this Michigan Model 175A tractor shovel handles a variety of jobs during work on a 0.57-mile section of the North-South Expressway in downtown Louisville, Ky. The rig made two to three passes to compact clay fill to over 100 per cent standard Proctor.



The handling of precast bridge-deck beams for the Franklin Street bridge in Houston, Texas, is done by a 60-ton Manitowac 3900. The beams will support the 20-inch-thick bridge deck of precast concrete. The crane was also used to pour concrete, drive sheet piling, and excavate the channel.

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Book discusses geology for scientist, engineer

"Basic Geology for Science and Engineering," by E. C. Dapples, familiarizes the reader with geologic processes and sediment and rock types.

Chapters detail soil materials, physical and chemical properties of rock materials, rock-forming minerals, igneous rocks, soil-forming processes, streams, shore-line processes, and ground water.

Concluding chapters cover wind deposits, processes associated with glaciation, sedimentary rocks, crustal deformation, and metamorphism.

Formulas, graphs, tables, and diagrams abound in the book, which is priced at \$9.50. Copies may be purchased from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Western-Knapp names two

Western-Knapp Engineering Co., San Francisco, has appointed W. H. Brett Chicago district sales manager, and Edward J. O'Connell executive assistant to Charles F. Skinner, vice president and general manager of the design, engineering, and construction company.

Brett will be in charge of business development; and O'Connell will serve as liaison between the planning, administrative, and operating segments of the firm.



"Hardrock Smitty" says:

**THE SMITH 125
AIR COMPRESSOR
CAN'T BE BEAT FOR
RUGGED DEPENDABILITY.**

Built to stand up under all conditions, the Smith 125 Compressor costs less to buy and less to operate. Easy maintenance, simple compact design means more air for less money. 95% of

all moving parts are available from the nearest industrial engine dealer. Besides the 125 there are 45 cfm and 75 cfm models both portable and stationary.

Write us for complete information and the name of your nearest dealer.

Ask your dealer for an "on the job" demonstration.

**SMITH
AIR COMPRESSORS
SMITH**

GORDON SMITH & COMPANY, INC., 483 College St., Bowling Green, Ky.

For more facts, use Request Card at page 18 and circle No. 379

SHORING and SCAFFOLDING SALES MANAGER

National manufacturer (AAA-1) is looking for a Sales Manager to handle sales of its Shoring and Scaffolding Division. Position offers a real opportunity for the man who is experienced in the field and wants to become a permanent member of an aggressive, growing organization. Compensation commensurate with the job, with additional pension, profit-sharing, and insurance benefits. Give full details of background, experience, earnings and other qualifications as basis for personal interview. Our organization knows of this advertisement and all inquiries will be acknowledged. Address: Box 513, Contractors and Engineers, 470 Fourth Ave., New York, N. Y.

CONTRACTORS AND ENGINEERS

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ENGINEERS



Fast mucking is the rule on the Mule Pass highway tunnel near Bisbee, Ariz. The Euclid 105 overshot loader is filling a Euclid 22-ton end-dump. Rock removed totaled 21,750 cubic feet per day. The new tunnel, 1,400 feet long, is designed to provide a better entrance to the city.



Ready for backfilling operations is this twin vehicular underpass running under the Daytona International Speedway to the infield at Daytona Beach, Fla. The underpass, to be used by spectator traffic, consists of two lines of Armco Multi-Plate pipe 14 feet in diameter and 250 feet long.

TRIAL SAMPLES Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!



HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.



WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers



THE WHITMORE MANUFACTURING CO.
LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

For more facts, use Request Card at page 18 and circle No. 380

January steel production highest since mid-1957

January steel production totaled 9,312,000 net tons—the highest for any month since the middle of 1957, when steel-making furnaces produced 9,391,402 net tons of ingots and steel for castings.

The January total was 600,000 tons greater than the output of December, 1958, and 2.5 million tons higher than for January, 1958.

According to the index of the American Iron and Steel Institute, January, 1959, production was 130.9 in terms of the basic index of average production during the period 1947 to 1949.

Turner elects two

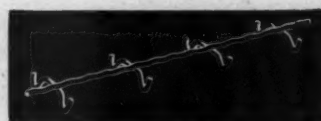
George E. Horr has been elected vice chairman of the board of directors of Turner Construction Co., New York City. At the same time, Francis B. Warren was elected executive vice president. Warren will continue as treasurer of the company.

TIME
SAVED
TWICE!
with

SYLGAB

Continuous BAR BOLSTER SUPPORTS

1. The right material at the right time. No delays due to late delivery or mixed-up shipment.
2. Designed for speedy, easy installations. Allows fast pouring due to high rigidity.



A RUGGED SUPPORT FOR SLAB REINFORCEMENT

Made in 5' lengths of hard steel wire supporting bar with wire legs spaced either standard 5" distance or directly under each slab rod (4" min.)

Member Concrete
Reinforcing Steel Institute

Manufacturers of Steel
and Wire Accessories
for Concrete and Fire-
proof Construction.



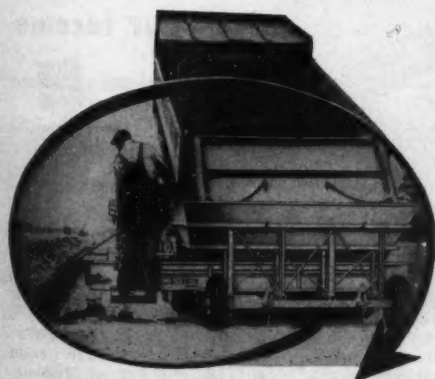
SYLGAB
STEEL & WIRE CORP.
79-05 Cooper Ave., B'dyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES

Request Catalog—Phone or Wire Collect

For more facts, circle No. 382

One low-cost machine does *all* these jobs

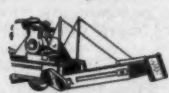


- back-fills trenches and curbing
- road shoulder work
- places sand, aggregate and hot mix

Power-Pack Hopper Conveyor
requires only one operator . . .
permits you to maintain traffic . . .
handles up to 180 tons per hour
. . . is easily towed or transported
to next job. Find out how this multi-
purpose machine can make money
for you!



Strike-off Box for road widen-
ing and shoulder work



Conveyor extension for back-
filling up to 8' from pavement



Write or phone today!

POWER-PACK CONVEYOR CO.

836 E. 140th St. - Glenville 1-7670 - CLEVELAND 10, OHIO

Power-Pack Conveyor Co.
836 E. 140th St., Cleveland 10, O.
We'd like more information on the Power-Pack Conveyor.

Name Title
Company
City Zone State

For more facts, use coupon or Request Card at page 18 and circle No. 381

MARCH, 1959



Culvert construction is an important preliminary to the work of enlarging U. S. 75 between Houston and Huntsville, Texas, from two to four lanes. A Bucyrus-Erie 11-B transit crane with ½-yard bucket is being used by E. W. Hable & Sons, Corsicana, Texas, to swing the ready-mix to the chute.



Excessive water on this 2-mile section of a secondary road under construction north of Memphis, Tenn., called for fill from 6 to 10 feet deep. G & Z Construction Co., Memphis, uses three International Model 75 scrapers to haul in the fill material.

always a bigger bite

Weight concentration in the lower center section eliminates top heaviness. Combined with 6 part block and tackle reeving, it gives OWEN Buckets that extra power to dig in at the beginning—and to continue to dig with equal force on both jaws during the entire closing cycle. At the end of the stroke, there is no power loss and lifting tendency is at a minimum.



Other features that make OWEN the leading clam-shell "seller" are:

- One-piece Head Construction
- Riveted Bowl Construction
- Single Main Shaft
- Recessed Lip Design

OWEN Engineers are at your service any time at no cost to you. Send us your needs, stating exactly what are your requirements. We should have the answer that will "fit the bill to a T".

The OWEN BUCKET CO.
 BREAKWATER AVENUE, CLEVELAND 2, OHIO
 BRANCHES: New York • Philadelphia • Chicago
 Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Request Card at page 18 and circle No. 383

BPR film covers mixing in dual-drum pavers

"Lost Mixing Time of Dual Drum Pavers," a 16-mm sound and color film issued by the Bureau of Public Roads, is based on extensive studies of portland-cement concrete paving, and highlights the importance of the simultaneous mixing interval in dual-drum pavers in meeting time specifications. The film shows trouble spots and the significance of proper adjustments to the batch meter.

Contrasting scenes illustrate why two successive batches of portland-cement concrete from a dual-drum paver are frequently mixed for different lengths of time. The film also illustrates how minimum mixing time for which the batch meter is set can

be measured.

Many of the illustrations are animated cutaway views of concrete being mixed within the mixing drums. These are followed by live action scenes of field construction operations, which makes it possible to follow the mixing process as it actually occurs on the job.

Prints of the 30-minute film may be borrowed or purchased from Ray B. Dame, chief, Photographic Services, Bureau of Public Roads, Washington 25, D. C. The film is priced at \$127.45 per copy, including film, reel, can, shipping container, and U. S. postage. Payment should not be sent with the inquiry.

American Institute of Consulting Engineers elects officers

George S. Richardson has been elected president of the American Institute of Consulting Engineers. He succeeds Herschel H. Allen. Newly elected members of the governing

council are S. C. Hollister, Harold M. Lewis, and Gerald T. McCarthy.

Emil H. Praeger and Dean G. Edwards have been elected vice presidents.

**If you sell dirt, peat or clay—
 improve its value—
 raise your income**



● Shredded, pulverized or processed soil materials are much more valuable because they're easier to put in place and are more productive in use.

And the Lindig Shredder above is the one for you. It feeds, shreds and loads up to 100 yds. per hr. Fed by bucket loader, power shovel or dragline, materials are conveyed to the patented dual shredding assembly; here 48 special alloy hammers rotating at 1200 RPM produce perfectly conditioned materials.

This Lindig Model CL-100 design protects rotor assemblies and ham-

mers from damage by large, foreign objects. Sound, rugged construction; pneumatic tires for easy movement and optional gas, diesel or electric power units.

Smaller capacity models also available. Write for name of your nearest Lindig Dealer. National sales and service since 1940.

EARTH SHREDDING EQUIPMENT
Lindig
 Manufacturing Co. Inc.
 1875 West County Road C, Saint Paul 13, Minnesota

For more facts, use Request Card at page 18 and circle No. 384

CONTRACTORS AND ENGINEERS



A shovel and earthmover team up to take care of fill requirements for the interstate defense highway paralleling Alabama 31 north of Birmingham. A Marion 93-M shovel is loading the material to an Athey PR15 attached to a DW15. S. Fowler Construction Co., Oneonta, Ala., has the contract for the job.



A 30-foot-long timber pile is driven by a 30-ton Lorain Moto-Crane during construction of a reinforced-concrete box underpass for U. S. 10 near Tarkio, Mont. The crane, using a 3,000-pound drop hammer, drives an average of 10 piles per 6½-hour day. Pew Construction Co., Missoula, Mont., holds the contract.

Freyssinet quarterly features railroad bridge

The latest edition of "Prestressed Concrete News," which is published quarterly for distribution in the United States and abroad by Freyssinet affiliated prestressed-concrete product plants, deals with construction of a prestressed-concrete slab structure for a railroad bridge in Alloues, Wis. Each issue features a prestressed-concrete structure erected

in this country and gives pertinent details, as well as the construction procedure. A major project constructed abroad, generally of the same type as that in the feature article, is also treated in each issue.

Copies of "Prestressed Concrete News" can be obtained by writing to Freyssinet Co., Inc., 62 William St., New York 5, N. Y.

Why **MILLER Tilt-Tops** give...

LONG LIFE
no "downtime" problems



more expensive
precision bearings
than most
competitive
trailers

Twelve roller bearings used in OT-15 shown above

...no other trailer offers so much
at this price

You get a jeweled chassis when you buy a MILLER... costly, heavy duty, deep race ball and tapered roller bearings are used on axles and walking beam shafts... for all these plus values —

- ★ Trouble-free operation — no costly replacement of bushings
- ★ No regular lubrication necessary
- ★ Wheels stay in line for the life of the trailer — saves on tire wear
- ★ No premium for this quality — MILLER Tilt-Tops actually cost less than many inferior trailers.

One man tilts, "drive-on-loads"
in less than TWO minutes!



*F.O.B. Milwaukee, Wisconsin
Complete with platform and tires.
Drum and optional equipment extra.
*Plus 10% Federal Tax

With MILLER's fast
hauling, you gain high
hourly rate productive time
for both operator and
rig... boost output!

Miller
Tilt-Top Trailer Inc.

146 R. South 92nd Street, Milwaukee 14, Wisconsin

For more facts, use Request Card at page 18 and circle No. 385

MARCH, 1959

GOOD RULE TO FOLLOW WHEN BUYING ANY SPECIALIZED MACHINE:

CHOOSE A MAKE WHOSE BUILDER THINKS
ENOUGH OF HIS OWN GOOD NAME TO
EQUIP HIS PRODUCT WITH



Photo Courtesy Ingersoll-Rand.

All through the construction industry, you find Continental Red Seal engines building prestige for specific makes of equipment. Within the range of industrial engines alone—15 to 260 horsepower—it would be hard to name a type of engine-driven product—compressor, mixer, pump, earth mover—of which one or more of the leading makes do not rely today on Continental power. Every Continental Red Seal is not only built for the job, but backed by parts and service facilities from coast to coast.

ANY EQUIPMENT IS BETTER EQUIPMENT WITH
DEPENDABLE RED SEAL POWER

9 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 54, CALIF.
6219 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.
ST. THOMAS, ONTARIO

Continental Motors Corporation

MUSKEGON • MICHIGAN

For more facts, use Request Card at page 18 and circle No. 386



Reaching 13 feet in the air, a Trojan tractor shovel spears four 12-inch-diameter concrete pipe sections from the stockpile of Concrete Pipe Corp., Dedham, Mass. The firm designed a set of forks, to attach to the arms of the rig, which enable the Trojan to load a truck in 15 minutes.



An arc of asphaltic concrete is laid at the intersection of a road and a taxiway at the Tucson Municipal Airport in Texas by a Trac-Pave machine by Trac-Machinery Corp., Nunda, N. Y., the machine is used in areas where the contractor formerly spread and raked the mix.

IN ORBIT for a LIFETIME!



PUNCH-LOK Hose Clamps

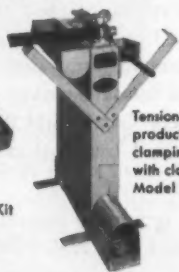
MR. LOK SAYS:
When a Punch-Lok clamp goes into orbit around a hose connection it's there to stay.

DOC PUNCH SAYS:
Tell the hose user it's a life-saver prescription for outer-space too.
NO SNAG! NO LEAKS!

NEW! from PUNCH-LOK



New K-45 Clamp-Master Kit now in all-steel carrying case finished in red baked-on enamel.



Tension-Air production hose clamping machine with clamp remover Model TA-1.

See your nearby Punch-Lok Distributor



"The Sign of a GOOD Hose Clamp"



Dept. J, 321 N. Justine Street, Chicago 7, Illinois

For more facts, circle No. 357

Austin-Western marks its first centennial

From cumbersome, slow, horse-drawn graders to their fingertip-controlled modern counterparts is a century-long story of progress. That story is Austin-Western's, which this year is celebrating 100 years of manufacturing road-building machinery.

Today an important part of the Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Austin-Western has experienced more than one organizational change during its existence. But its product line today—graders, compactors, sweepers, and hydraulic cranes—is virtually, except for improvements, the same line that has successfully worked in the field for the past 100 years.

Austin-Western originally was a consolidation of two companies—the Austin Mfg. Co., which was established at Harvey, Ill., in 1859, and the Western Wheeled Scraper Co., which was founded in 1877 at Mt. Pleasant, Iowa, and moved to Aurora, Ill., in 1891. In 1902, Western Wheeled Scraper purchased Austin, and 32 years later all manufacturing operations were consolidated at Aurora.

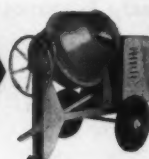
The Austin-Western Co. was purchased by the Baldwin-Lima-Hamilton Corp. in 1951. Since that time, it has operated as a separate section of the Construction Equipment Division. The section has its own modern plant at Aurora.

Ford, Bacon & Davis elects senior veep

William B. Poor has been elected senior vice president of Ford, Bacon & Davis, Inc., engineers and business consultants of New York City, Chicago, and Los Angeles. Poor, former vice president and manager of the construction department, has had direct charge of the firm's work for the natural-gas industry, as well as general supervision of all construction.

Poor is also a member of the executive committee of the company, and vice president and director of two of its wholly owned subsidiaries, Ford, Bacon & Davis Construction Corp. and Ford, Bacon & Davis Canada, Ltd.

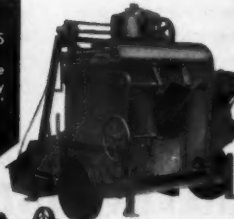
MODEL 31-5T
3 1/2 cu. ft. tilting drum; is a standard 1/2 bag contractor's machine.



MODEL 65-CRT
Gilson's one bag mixer with power loader



MODEL 16S
Has a three bag capacity with a 74" wide skip.



MODEL 115-CRT
Gilson's two bag mixer's sturdy frame heavy duty mixer



Gilson machines are backed with 47 years of manufacturing experience. Machines are all Timken Bearing equipped.

Write for Price Lists and other Free Catalogues.



Also
Garden Equip.,
Shredders — Tillers
— Mowers

BROTHERS CO.
FREDONIA, WISCONSIN

Choice Dealerships still available.

For more facts, circle No. 388

SERVICE FOR YOUR B&D TOOLS



For genuine Black & Decker repairs check Yellow Pages under "Tools-Electric" for address of nearby Black & Decker **FACTORY SERVICE BRANCH**. Free tool inspection when requested • Genuine B&D parts used • Factory-trained technicians handle all work • Standard B&D Guarantee at completion of recommended repairs • Fast service at reasonable cost.

Or write for address of nearest of 48 branches to: THE BLACK & DECKER MFG. CO., Dept. S3603, Towson 4, Md.



QUALITY ELECTRIC TOOLS
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CONTRACTORS AND ENGINEERS

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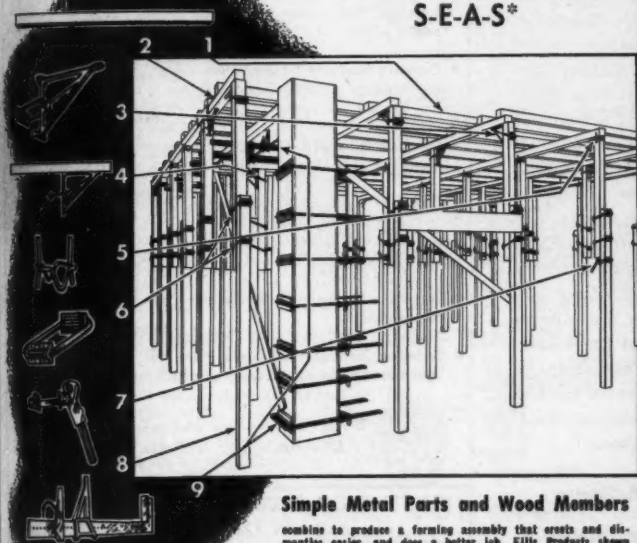
D ENGINE

A limited work area and forming variations were no big problem for the contractor on the Joel Tyler Headley School in Chicago. A minimum amount of Symons forms and filler pieces in various sizes, used to construct irregularly shaped foundation walls, made the job flexible enough to meet all conditions.

Wet clay, gumbo, and sand make grading difficult at the Grand Forks, N. D., Air Base, which is being expanded for planes of the Strategic Air Command. This Allis-Chalmers TS-260 is part of a fleet moving about 280,000 yards of material on a 142-acre site under a U. S. Army Corps of Engineers contract.

USE ELLIS METHODS

Of Suspended Reinforced Concrete Construction
... the Methods Offering
S-E-A-S*



Simple Metal Parts and Wood Members

combine to produce a forming assembly that erects and dismantles easier, and does a better job. Ellis Products shown are: (1 & 2) Ellis Sticks used as joist and girders respectively. A contractor can use his own wood. (3) head clamp, (4) head for T-shores, (5) slip-in shore holder, (6) clamp for shores, (7) Jack, (8) complete Ellis Shore, consisting of two wood members and two clamps, (9) beam-and-column clamp.

Unlimited Applications! Here are a Few Proven and Tested Uses:

BUILDINGS

Flat Slab Jobs
Joint Jobs
Roofs, Girder, & Slab Jobs
Wall Braces
No-Shoring

HIGHWAYS

Bridge Construction
Overpasses
Underpasses
Pedestrian Ramps
Large Culverts

OTHER

Tunnels
Residential Housing
Large Sewers
Reservoirs & Tanks
Stadiums

* S - E - A - S

means means means means
Safety Economy Adaptability Speed

S-E-A-S is nothing new—it is the profit formula contractors have always sought to use. Ellis Methods simply put these ideas into practice, and offer you the advantages of certain exclusive patents that assure you of a successful, low-cost operation. Buy or rent Ellis Products from your equipment dealer, and put these money-making methods to work for you now! Write for additional information.

ELLIS MFG. CO.
INCORPORATED

211 N.W. 4TH ST. • OKLAHOMA CITY, OKLAHOMA

For more facts, use Request Card at page 18 and circle No. 390

New • Rugged ELECTRIC VIBRATOR

DELIVERS 9000 VPM AT 2 HP

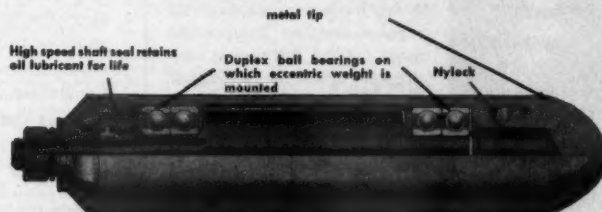
UL approved

This new electric concrete vibrator, developed by STOW MANUFACTURING COMPANY, Binghamton, N. Y., features a new lightweight vibrator head that delivers, at high amplitude, 9000 vibrations per minute to the mix.

This vibrator, STOW model BU, is powered by a totally enclosed 2 HP Universal motor, operating on 115 volts, AC or DC, 25 to 60 cycles. The motor is protected by a skid mounting, so arranged that the unit can be easily pulled around by the flexible shaft.



Take a look at this vibrator head. It is 10 inches long, and available in diameters of 1½, 2 and 2½ inches, capable of 9000 VPM. Vi-



brations are achieved by use of an eccentric weight mounted in special high-speed duplex ball bearings at each end. The outside of the head is case hardened, for extra long wear, and it has a replaceable steel tool tip. STOW estimates that these two improvements alone will double the life of the heads.

Construction men report that they like the light weight, the long life, the low replacement cost, and the terrific wallop of these heads. Weight of the 1½" head is about 5 lbs.; the 2" head about 7½ lbs.; the 2½" head, about 9 lbs. The cost of this head is less than 1/3 the cost of expensive motor-built-in type heads.

The 1½" head is also available with a hard rubber tip for use where plywood forms are being used.

For more information about the complete line of STOW concrete electric and gasoline vibrators, vibrating screeds and rotary trowels, contact your STOW distributor, or write for STOW Catalog 580.



STOW STOW MANUFACTURING CO.
40 Shear St., Binghamton, New York

STOW MANUFACTURING CO., Dept. C-4
40 Shear St., Binghamton, N. Y.

Please send me Catalog 580 on Stow's line of Construction Equipment.

NAME

ADDRESS

CITY STATE

For more facts, use coupon or Request Card at page 18 and circle No. 391



A NEW SECTION OF ROAD cut through a rugged region of the Blue Ridge Mountains calls for excavation of one million yards of material, half of it rock. The International TD-24 with dozer and ripper is one of five rigs handling much of the excavation. The Payhauler, background, is part of the truck-and-shovel operation.

LOW COST TRENCHER

**Fits Any Job...
Fits Your Budget**

**TRACTOR
MOUNTED**

Dig ditches faster, in less time and at lower cost per foot of trench with the versatile Arps Trench Hog. There's nothing better for telephone, electric, gas and water line trenches; foundations, septic tank installations, drainage ditches, sewer systems; and scores of other trenching jobs handled every day by contractors, utilities and municipalities. ■ Digs 3½, 5½ and 7 ft. deep in widths of 6" through 20"; full hydraulic depth control; mounts on all popular tractors; independent speed control for perfect digging on curves, too. ■ Get full details and name of dealer from the Arps Corporation, New Holstein, Wis., Dept. C&E.

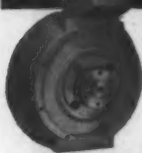
**ARPS
CORPORATION**
NEW HOLSTEIN,
WISCONSIN

**TRENCHERS • HALF-TRACKS
BULLDOZERS • UTILITY BLADES**

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Re-Power With **FUNK** Modular Units

FUNK TORQUE CONVERTERS



Extend the life of your engines, prevent stalls, eliminate damaging shock loads — re-power with FUNK Torque Converters. Compact units, fit SAE housings. FUNK Standard Flange System easily adapts other FUNK units for your power needs.

FUNK GEAR REDUCTIONS



Small, popular-make high speed engines equipped with low-cost FUNK Gear Reductions develop the same power output at substantial savings over large expensive slow speed engines. Eliminate expensive and dangerous V-belt and chain drives. Exclusive FUNK Straddle Mounted Pinion. Proved Performance.

Consult Your Dealer or Write

**FUNK
MFG. CO.**

P.O. BOX 577-B
COFFEYVILLE
KANSAS

For more facts, circle No. 393

New York engineers elect Dr. Anatole Gruehr

Dr. Anatole R. Gruehr has been elected president of the New York State Society of Professional Engineers.

Other officers elected include Victor E. Hall, consulting engineer of Syracuse, vice president; Charles A. Hescheles, U. S. Rubber Co., second vice president; John A. Mathes, Consolidated Edison Co. of New York, Inc., financial secretary; and Daniel J. O'Connell, consulting engineer of the Bronx, New York City, treasurer.

Dr. Gruehr, a member of the National Committee of the society, and chairman of the Committee on Engineering Preparation, is head of the department of economics and history at the Polytechnic Institute of Brooklyn. A graduate of the Massachusetts Institute of Technology, he is also the representative of the National Society of Professional Engineers at the United Nations.

Meissner joins McGraw

Industrial consultant Milton F. Meissner has been elected to the board of directors of F. H. McGraw & Co., engineers and constructors of New York City. Formerly vice president of Olin Mathieson Chemical Corp., New York City, Meissner succeeds Fred J. Mayo, who resigned to become president of Ingalls Shipbuilding Corp.

Branford Co. moves

The Branford Co., manufacturer of pneumatic vibrators, sprayers, and other specialties, has transferred its manufacturing facilities from New Haven to 132 Glen St., New Britain, Conn.

Randolph L. Ruhley has been named vice president and general sales manager in charge of all sales for the company.

Prescon Corp. appoints

Crest Concrete Systems, Inc., Chicago, has been named a franchise representative in that area for The Prescon Corp., Corpus Christi, Texas. Crest Concrete will handle the Prescon system of post-tensioning concrete for bridges and buildings.

ESCO FLARE TRANSISTOR LIGHTS

"The Brightest of Them All"

• Heavy-duty hermetically sealed transistor unit—even operates under water.

• Exclusive Economy Battery in Jumbo models gives 50% more battery life for same price as others.

• Lower initial cost. Troublefree operation makes it economical to operate.

• Heavy-duty case and die cast head.

• Exclusive troublefree switch built right in head.

• Esco Flare Barricade for Jumbo and Deluxe models.

• Exclusive features make Esco Flare the best transistor light you can buy—and there's one for every requirement.



Jumbo 7" Light



Deluxe 3" Light



Write for literature and prices.
Distributorships available.

FULLY
GUARANTEED

ELECTRONIC SPECIALTIES COMPANY
BATAVIA 12, ILLINOIS

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BULK MATERIAL MEN:

AUTOMATE

PRESENT EQUIPMENT FOR

BULK MATERIALS

HANDLING WITH

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Driving Plate can be removed and auger installed on Digging Bar in five to ten minutes.

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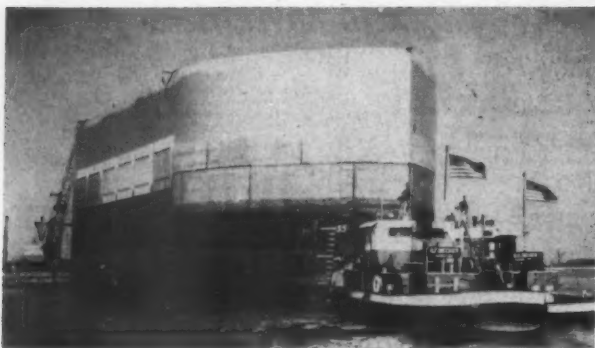
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A 10,000-TON STEEL CAISSON, 68 feet high and 60 feet wide, heads out into the Detroit River to be sunk into place for the \$27 million water-intake station for Wayne County, Mich. The new facility will supply the county with 76 million gallons of water daily. About 9,000 tons of concrete was used to sink the caisson; the sinking job took 60 hours.

A-C acquires Smith Co.; makes personnel changes

Through an exchange of stock, the Allis-Chalmers Mfg. Co., Milwaukee, has purchased the assets of the S. Morgan Smith Co., York, Pa. The Smith plants, which have been taken over by the A-C Industries Group's newly created Hydraulic Division, will be known as the York Works of the division. The York facilities will be devoted to the research, design, engineering, and fabrication of a complete line of hydraulic turbines and accessories; pumps and pump-turbines; valves for industrial, water-works, and power applications; and specialized heavy hydraulic equipment.

Three officers of the S. Morgan Smith Co. have new positions in the York Works: Beauchamp E. Smith, general manager; Burwell B. Smith, assistant general manager in charge of sales; and Duncan D. MacArthur, assistant general manager in charge of industrial relations, procurement, and comptroller departments. William J. Rheingans, former manager of the hydraulic department of the West Allis Works of A-C, has been named assistant general manager in charge of engineering at York.

J. L. Singleton, vice president of A-C's Industries Group, is head of the new division.

Shawnee now makes Push-Trac tractors

Shawnee Mfg. Co., Topeka, Kan., has taken over the manufacture and sales of the Push-Trac tractor formerly made by Arco Iron Works. The Shawnee firm manufactures a full line of backhoes, loaders, blades, and other equipment for the construction industry.

American Cyanamid news

John R. Burkett has been appointed general sales manager for the explosives and mining chemicals department of American Cyanamid Co., New York, N. Y. Burkett will direct commercial operations of the department's new regional sales organization from New York City.

At the same time, the company announced that E. C. Farrar had been made eastern regional manager and O. R. Brown, western regional manager. Farrar will be located in Leetrobe, Pa.; Brown will work from offices in Salt Lake City, Utah.

Makes 230' lifts using new tubular frame boom

WHIPPING, LAGS AND BACKLASH ELIMINATED... MORE LIVE LOAD CAPACITY—LESS DEADWEIGHT



A new type of crane boom — mounted on a Manitowoc 60-ton Model 3900 crane — is doing a spectacular job for the John F. Beasley Construction Company, setting steel at heights up to 230'. The job involves all the steel work for a new bridge to carry U. S. Highway 212 over the Missouri River between La Plant and Gettysburg, South Dakota. ■ Constructed of high-strength tubular steel, the new boom is considerably lighter in weight than conventional booms. Although 200' long, (without 30' jib) it weighs 25% less than standard booms as short as 150'. Therefore, it can handle substantially greater live loads because of less deadweight of its own to support. ■ Operator O. K. Bean reports: "I never have trouble with boom whipping now, even when carrying heavy loads high up... and I can boom out further without danger of overloading the crane. We can still locate the 'iron' exactly on the bolt hole the first time... with no lags or backlash." ■ For specialized jobs like this or everyday jobs, you can depend on outstanding crane or excavator service from Manitowoc — check with your distributor soon!

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CONTRACTORS AND ENGINEERS

"Fast And Tough As A Texas Jackrabbit..."

Our Job-Hopping Trojan 154 Services Three Loading Areas—
Keeps Trucks On The Move."



"The Trojan 154 is the spearhead of our operation," says Theodore Collora, President of Atlantic Gravel Co. Not only does it charge the hopper in one area, it handles all the truck-loading in two other areas located a quarter of a mile away . . . and they come in a steady stream! It's nothing for the '154' to handle a minimum of 10 trucks an hour and still find time for other work around the plants . . . And, there has been nothing but normal maintenance and no downtime since its purchase in December 1957 . . . Operator Dick Gant said, "The '154' is worth its weight in gold . . . It's easy to handle and operates fast . . . I really get around in this machine" . . . We say, "Action-Test" the Trojan 154 . . . Your local distributor will gladly arrange both the time and place that best suits your own working schedule.



Complete, detailed brochures are now available on the Trojan line. For your material write to Department C-3, The Trojan Division, The Yale & Towne Mfg. Co., Batavia, N. Y. or San Leandro, Cal.



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YALE & TOWNE

2 & 4 Wheel Drive Front End Loaders

THE TROJAN DIVISION, THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

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6 YARDS PER PASS

A seventeen yard tandem-axle truck loaded in 90 seconds!

A twelve-yard semi heaped in 60 seconds!

Over 500 yards loaded EVERY HOUR by just one Tractor Shovel

Someone's dream? Not any more! It's been standard practice on general contractor J. R. Cianchette's jobs near Pittsfield, Maine, for almost a year now. That's when his big 6 yard Model 375A Michigan Tractor Shovel went to work.

Cianchette's problem up until then had been a common one: "How to hold down loading costs and still meet increased production demands."

At first, purchase of more of the fastest rubber-tired 2 to 2½ Tractor Shovels available seemed the best solution. Then, local Michigan distributor, Portland Tractor Co., showed Company President J. R. Cianchette the new 6 yard Michigan. When Cianchette saw the big rig in action, he bought!

**Michigan output totals
8,000 yards per 16 hour day**

Today, the big Michigan truck-loads and plant-feeds over 500 yards of sand and

stone every hour. "Despite its size, our operators would rather run this big Tractor Shovel than any other," says Mr. Cianchette. "Like all Michigans, it's well-balanced, easy maneuvering, easy operating. It has the right weight and power to handle its bucket. Its smooth operation keeps operator efficiency high all day—even though the one operator alone loads as much sand and stone as can three men on three 2 yard rubber-tired Tractor Shovels."

Excavates sub-base, loads concrete, does many similar scattered odd jobs

Such high production gives the 6-yard Michigan extra time to do all kinds of odd jobs on Cianchette's bridge, road, housing development and airport contracts. For example, it loads out broken concrete runway pavement. It has excavated for new and deeper runway and

apron subbases. It backfills around foundations, footings and slabs. It unloads disabled vehicles to the service area. Unloads trucked-in expansion tanks, reinforcing steel, metal culverts, concrete pipe. Grades haul roads on the work sites. Even loads small five and six-wheel trucks with bank-run dirt . . . needs only one pass (20 to 30 seconds) per truck.

In all, Mr. Cianchette figures his big Michigan has cut loading costs "more than 50%." Perhaps 6 yard "bites" can do the same for you! Talk it over with your Michigan Distributor before planning your next job.

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